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LETTERS  
— FROM —  
A Mother to a Mother  
ON CHILDREN'S  
TEETH.

"MRS. M. W. J."

THIRD EDITION.

PRICE, 25 CENTS.

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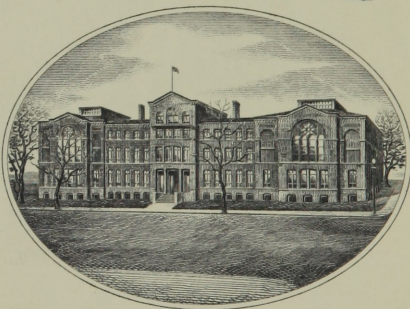


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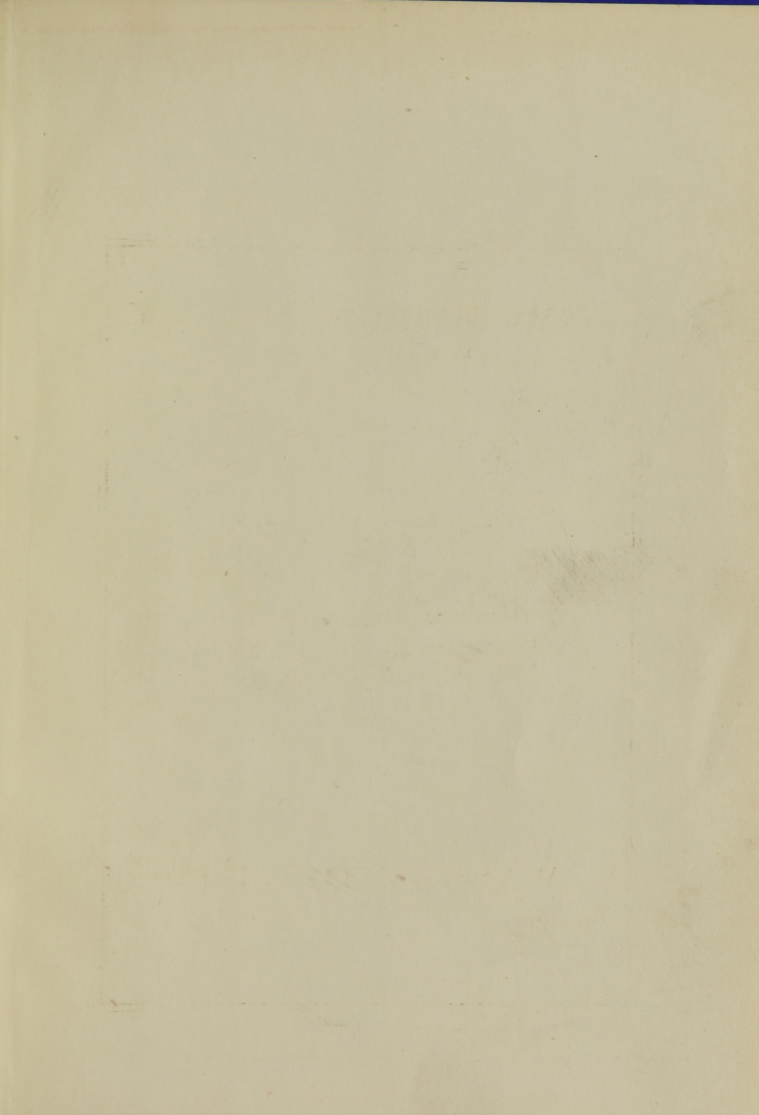
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# LETTERS

—FROM—

## A Mother to a Mother

ON THE

Formation, Growth and Care

OF THE

# TEETH.

BY

The Wife of a Dentist,

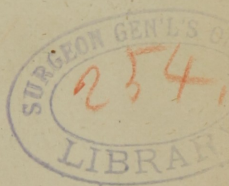
“MRS. M. W. J.”

Honorary member Southern Dental Association ; Corresponding Editor  
*Archives of Dentistry*, St. Louis ; and *Southern*  
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1885.



Annex

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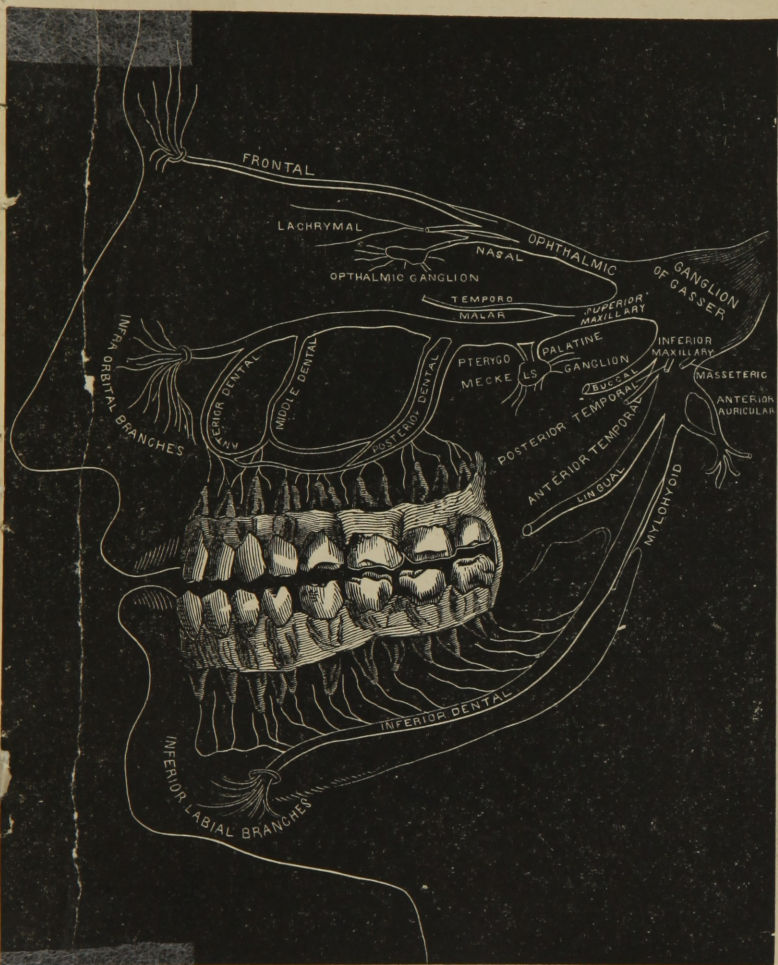
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1885

*Third Edition. Revised and approved by the Author.  
Published by request, as per resolution offered in South-  
ern Dental Association, 1885.*





## FIFTH PAIR OF NERVES.

(For description, see page 17.)



DEDICATED

TO

B. H. CATCHING, D. D. S.,

Atlanta, Georgia,

At whose suggestion, and by whose request, these "Letters" were  
written for the *Southern Dental Journal*,

—BY—

"MRS. M. W. J."



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# CONTENTS:

	PAGE.
Dedication .....	5
Introduction.....	9
LETTER I.	
How the body is built—Importance of the teeth.....	13
LETTER II.	
When and how the teeth are formed.....	16
LETTER III.	
What the teeth are, and of what they are formed.....	19
LETTER IV.	
Food Principles .....	24
LETTER V.	
Where the elements of tooth substance are found—Calcium	29
LETTER VI.	
Other chemical elements.....	39
LETTER VII.	
Effects of disease on tooth-structure—Vaccination.....	44
LETTER VIII.	
Dentition and disease—Dentition not disease.....	47
LETTER IX.	
Care of the teeth; temporary and permanent—In sickness and in health.....	57
LETTER X.	
Weaning—Infant's Food.....	63
LETTER XI.	
Why the baby-teeth should be preserved.....	70
LETTER XII.	
Filling the baby's teeth.....	76
LETTER XIII.	
Eruption of the permanent teeth.....	80
LETTER XIV.	
Causes of decay—Prevention.....	87
LETTER XV.	
Diseases of the soft tissues.....	93
LETTER XVI.	
Diseases resulting from decayed teeth.....	97
Conclusion .....	102



## The Ideal Future of Dentistry.

---

*"When patients comprehend that the best and finest work will not preserve teeth in defiance of their own abuse and carelessness ;*

*"When the teeth of children will not be allowed to 'go to destruction,' because they have the choice of whether attention shall be given or not ;*

*"When we shall not, through over-sympathy for the child's present feelings, be directed to 'do nothing if it is going to hurt' ;*

*"When such a remark as 'I would rather have her lose her teeth than be late at school,' will be impossible, by reason of an intelligent understanding of the importance of the teeth ;*

*"When efforts to instruct parents as to the means of preventing premature loss of the deciduous teeth, and the preservation of the permanent ones, shall be rightly esteemed and co-operated with."*

---

Extract from "AN IDEAL," by W. P. Dickinson, D. D. S., in *Missouri Dental Journal*, June, 1881.



## INTRODUCTION.

---

“NO child should be allowed to have a tooth sufficiently decayed to ache, and no mother should be allowed to remain in ignorance of the means by which this can generally be prevented.

“Naturally anxious for the best welfare of her child, physically as well as mentally and morally, well-meant advice, kindly proffered, couched in proper terms, coming from a competent source, will never be rejected by any sensible mother.

“If proper advice were given every prospective mother respecting the care of herself—especially in regard to furnishing abundance of proper nutrient elements, ‘bone and tooth food,’ from the very hour of conception—children would be born with the tooth-germs so well nourished during foetal life that they would erupt at the proper time with little disturbance, and be of such fine structure that but little care beyond strict cleanliness and proper diet would be required to keep them perfect.

“To this end, mothers must be taught how much depends on their own efforts, guided by the instructions of those made competent by a life of research and study.

“Teach mothers that the teeth are not formed, as so many evidently suppose, during the few weeks or months preceding eruption, when the gums are swollen, and the child is cross and peevish, but that they date their existence almost from the very beginning of foetal life ; that as early as the sixth or seventh week after conception, the germs of the teeth are forming in the dental groove—soft and pulpy, it is true, till about the fourth month, when calcification begins ; the whole tooth (with the exception of the root) being thoroughly solidified, and the enamel formed, before it makes its appearance in the baby’s mouth ; though the root continues to elongate after the crown has emerged from the gum.

“As the teeth can only be formed from tooth-material, and as this is required from the very inception of the germ formation, teach the mother that she alone can supply this essential material. If she does not furnish it (designedly or otherwise) in sufficient quantity, in addition to the amount requisite for her own use, it will be abstracted from her own osseous tissues, and she will suffer correspondingly, not only in her teeth and bones, but, under very insufficient *regime*, even ‘the brain will become enfeebled from lack of phosphoric acid, and the muscles pale and flabby,’ and the mother thus famish for lack of the necessary elements of nutrition, even while apparently enjoying the most luxurious diet.

“Teach the mother what this tooth-making material is, and where she is to find the necessary elements.



Teach her that she must not only have *proper* food, and *sufficient* food; but that her system must be kept in condition to digest and assimilate this food. Teach her the importance of physical exercise, of fresh air and sunlight and of cleanliness, as indispensable adjuncts to diet.

“Teach her that these principles must be applied, and these precepts acted on, not only through the nine months of *gestation*, while she supplies all the elements of nutrition through her blood, but also during the whole period of *lactation*, when her milk is not only the sole magazine of lime-salts for the further development of the teeth and bones, but the only source of nutriment for the whole body of the rapidly growing child.

“If, after weaning, she will habituate her child to plain, wholesome food, with scrupulous cleanliness of the teeth, and abundant exercise for them; provide it with comfortable, easy dress; and enforce strict obedience to the laws of health; what a splendid race of men and women would we have in the next generation !

“In the words of Dr. Welchens: ‘Good, substantial food, containing all the elements necessary to build and nourish the various tissues of the body, clean, warm clothing to protect the surface, and regular out-door exercise, all with temperance and moderation, will not only raise the child well, but will, in a large majority of cases, *raise a denture* well calculated to withstand the changes of life, and en-

duce the wear and tear of mastication.' Mothers and children would thus attain a higher standard of physical development, for these benefits could not accrue solely to *the teeth*. 'A knowledge and observance of nature's laws must result in an improvement of the whole being—body, mind and heart.'"

[Extract from "EDUCATION OF MOTHERS," by Mrs. M. W. J. in *Southern Dental Journal*, October, 1883.]

## LETTER I.

HOW THE BODY IS BUILT UP—IMPORTANCE OF THE  
TEETH IN THE HUMAN ECONOMY.

---

MY DEAR YOUNG FRIEND:

A year ago you left us, a happy bride: you then felt that nothing could be added to the completeness of the tie binding husband and wife; now, however, you write me that a still greater fullness is to round the measure of your life; you ask me to tell you how to live, so that the *new life*, now being built from your own heart's blood, may be physically strong and perfect.

Especially in regard to the formation, eruption and care of THE TEETH do you desire advice and information.

Much is involved in these momentous questions; they have formed the subject of earnest investigation and profound thought; the laboratory of the chemist and the magnifying-glass of the microscope have aided in solving the mysteries of life.

You know that your body is built up from the materials gathered from your food, and from the oxygen of the atmosphere taken into your lungs, aided by exercise, especially in the open air and sunlight. From your food are gathered the elements that knit

the bones which form the framework; the flesh which clothes the bones; the blood that courses through the arteries; and the brain which controls the whole.

Disease and death will inevitably ensue if the food does not contain the various elements necessary to build these several portions of the body, so different one from the other—the bones, solid and unyielding; muscles, firm and hard; membranes, delicate and tender; the blood, so brilliant in its coloring, rushing through the arteries, distributing the life-giving elements to every portion of the system; each little drop coming back through the veins, every half-minute, to the heart, bringing its portion of that which is worn out, or has been rejected as worthless.

In the air we breathe, in the water we drink, and in the food we eat, must be found all the constituents of bone and muscle, blood and brain. If the supply of any of the essential elements of nutrition be deficient, healthful, vigorous tissues will not be formed, and the entire system will suffer.

This food, moreover, must be thoroughly prepared by mastication for digestion, while the system must be in such a condition of health as to assimilate (appropriate and make use of) the food as it passes into the circulation.

Without GOOD TEETH there cannot be thorough *mastication*.

Without thorough mastication there cannot be perfect *digestion*.



Without perfect digestion there cannot be proper *assimilation*.

Without proper assimilation there cannot be *nutrition*.

Without nutrition there cannot be *health*.

Without health WHAT IS LIFE WORTH ?

Hence the paramount importance of the teeth.

## LETTER II.

### WHEN AND HOW THE TEETH ARE FORMED.

---

Because the teeth are of such importance in the nutrition of the body, the creative energies are directed toward their formation at a very early period.

The dimpled hands and rosy feet of the baby, which so delight the eyes and heart of the young mother, are perfect in form and shape at its birth; the first pearly tooth does not make its appearance till many months later, and six years must elapse before the permanent teeth begin to come into place.

And yet, six months before the birth of the child, the germs of the twenty baby teeth are lying side by side in the dental groove, while the germs of the permanent teeth are all lying hidden in the tender gums when the baby is born. But how many months and even years must elapse before the last are called into active service!

And all this time they are growing. Taking their shapes long before the little limbs bear any resemblance to the plump legs and arms that are so beautiful to the mother's eye, the teeth are being built, atom by atom, as the necessary elements of tooth substance are furnished *by the mother's blood.*

For seven months before and seven months after birth, the first little baby-tooth is growing. At first it is a mere sac containing the pulp, but having the shape of the future tooth. On this sac are deposited the calcareous elements, or lime-salts, of which the hard body of the tooth is formed.

Little by little, the tender, living pulp is surrounded by dentine, the bony substance forming the body of the tooth. Over this is laid the glassy, outward envelope of enamel, dense and impervious to the healthy fluids of the mouth; and thus, perfect in substance, size and shape, the crown emerges from the gum, the root growing longer as the walls of the socket are built around it to hold it firmly in its place. A minute opening at the apex of the root, called the foramen, gives passage to a nerve, an artery, and a vein, through which the circulation is carried on that conveys the nutrient elements to every portion of the tooth; for, dense as they appear, the teeth are endowed with the most sensitive nerves, and are subject to the same laws that govern every other portion of the human organism, a change of particles—"composition and decomposition," waste and repair—going on slowly but constantly, as long as life lasts.

Study our frontispiece and see how amply the teeth are supplied with nerves; and the supply of arteries and veins (not shown in the cut), is quite as abundant. This would not be if active, unimpeded, constant circulation was not important. (This cut was

kindly lent us by the publishers of Garretson's Dental Surgery).

If the great Creator deems the little baby-tooth of sufficient importance to require fourteen months for its growth and development, while nine months suffice for the *eye* or the *ear*, should not the mother look on it as a precious jewel, worthy her most watchful care lest it suffer injury by her neglect and carelessness?

Should she not earnestly seek to learn what are those elements of tooth-food which she alone can supply, and where they are to be found in the greatest purity and abundance?

She does this much for her flowers and her bird; can she do less for her baby's teeth, on which depend so largely its future health and happiness?



### LETTER III.

WHAT THE TEETH ARE, AND OF WHAT THEY ARE FORMED.

---

That you may the more readily comprehend the necessities of the teeth, and how you may provide those of your babe with the proper elements to make them so sound and perfect in structure that they will last as long as life itself, with proper care and treatment, we will now consider *What the tooth is*, and *Of what elements it is composed*. We have seen that the tooth is an organized body, each having a nervous and a circulatory system within itself.

The central cavity of the tooth is occupied by *the pulp*, where centre the nerve, artery and vein mentioned as passing through the apex of the root. Each tooth is thus connected with the "very centers of life"—the heart and brain—through this connection with the general nervous and arterial systems.

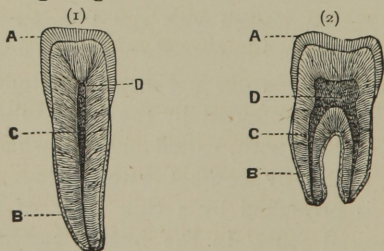
The pulp is surrounded by the bony substance of the body of the tooth, called *dentine*, which, being liable to decay by contact with various external agencies, is protected by a thin layer of the most dense material found in the human system, called *enamel*. The enamel, being the external, visible layer of the tooth, its glassy texture and smoothness of surface are familiar to all.

From the pulp, through the dentine, to the internal surface of the enamel, ramify the most sensitive nerve-fibrils, and minute capillary vessels containing the finest particles of the blood, laden with the life-giving elements which build up the tissues.

The nutrient elements are thus distributed to every portion of the tooth-structure, effete (worn-out) particles being taken up by absorbents and disposed of through the general circulation, as in every other portion of the body.

The root, being entirely hidden in the gums and bony socket, and thus protected from injurious contact with foreign elements, is covered with a less dense material than either the enamel or the dentine, called *cementum*; this material bears a closer resemblance to *bone* than any other portion of the tooth.

The relative position and proportions of the different parts of the teeth will, perhaps, be made clear by the following diagram :



In which the figures represent (1) an upper *central incisor*, (upper front tooth,) and (2) a *molar*, (jaw tooth,) split so as to show the various parts ; A is the

cutting edge or grinding surface, covered as is the entire crown, with *enamel*; B, the *cementum*; C, the *dentine*; D, the *pulp cavity*. The exposed part of a tooth—that which is covered with enamel and stands above the gum—is called the *crown*; that which is held within the socket, the *root*; and the constricted part between the crown and the root, the *neck*.

We have said that the *cementum*, or material composing the root of the tooth, bears a close resemblance to *bone*. Now, you perhaps ask, what is bone?

If you have lived in the country, and know anything about *raising chickens*, you know that when eggs are laid with the shells too thin, as often happens—sometimes but little more than a mere skin confining the contents—*bones*, left from the meat used at table, are heated and pulverized, and fed to the hens, to furnish them with *lime* for their egg-shells.

Bones, therefore, are composed largely of lime. If, instead of being burned, (which process leaves the inorganic matter or lime salts), they are dissolved in strong acids, there remains a cartilaginous or jelly-like mass, this being the animal basis, with which the mineral elements are combined. Thus the constituent elements of tooth-substance are both animal and mineral, by far the greater portion of the latter being lime in its various chemical combinations.

Teeth differ from bone chiefly in the much larger proportion of lime-salts, especially the phosphate, entering into their composition.

In every 100 parts the *enamel* contains about 96

parts inorganic matter; the *dentine* about 72, and the *cementum* about 67. Bone containing about 56 parts approaches most closely the proportion found in *cementum*.

As the blood contains the entire list of nutrient elements composing the body, holding in solution all the lime-salts that enter into the formation of the bones and the teeth, you must furnish your blood, through your food, with a sufficient supply of *lime* to not only nourish your own bones and teeth, but also to build up those of the little being for whose physical proportions you are henceforth responsible.

On you, and you only, is laid this responsibility. The physical impress of the *father* was stamped, once for all, on this new being at the moment of conception. If for *good*, you will only make it better; if for *evil*, you alone can apply the remedy.

From your system only can the nutrient elements be drawn, which are required in the daily waste and repair in your own physical organization and also in building the tissues of your babe.

If the supply be deficient, on you and on your offspring will fall the consequences, and they are often very serious.

If the supply is meager, your own bones and teeth may be drawn on to supply the deficiency; your teeth may become sensitive and painful, and decay set in; your muscles will become pale and flabby, and you will feel weak and languid; even the very brain itself, in extreme cases, will become enfeebled from



lack of phosphoric acid withdrawn to form the phosphates of lime and magnesia entering into the composition of the teeth and bones.

In the words of Dr. G. R. Thomas : "The child, while dependent on the mother, gets lime, phosphorous, silex, potash, and all the other elements of which the teeth are composed, in just such proportions as she gets them from the food nature provides, in their natural proportions. But where can the child, in its forming state, get these necessary elements, if the mother lives principally on starch, butter and sugar, neither of which contains *a particle* of lime, potash, phosphorous or silex? \* \* \* \* Nothing short of a miracle can give her a child with good teeth, and especially teeth well-enameled."

It has been well said, "Chemically good food offers all the elements necessary for elaborating good blood; good blood supplies all the materials to construct perfect tissues; perfect tissues constitute the perfect organization of the whole being."

I hope I have succeeded in impressing on your mind a sense of the solemn responsibility you have assumed, in taking on yourself the duties of maternity, and that you are ready now to ask: "Where shall I find these elements?" and that you feel willing to make some little sacrifice, if necessary, in *diet*, to benefit not only your unborn babe, but future generations, so that posterity shall call you blessed.

## LETTER IV.

### FOOD PRINCIPLES.

---

To furnish the system with the necessary lime-salts you must not for a moment imagine that I would advise you to use *lime* itself in its crude form, though much benefit is derived from the free use of *lime-water*, prepared from this crude lime. This is cheaply and easily prepared at *home*, though quite expensive when obtained from the druggist, labeled *Aqua Calcis*.

To make it requires simply a teacupful of clean, unslackened lime, such as is used by housebuilders. Put this in two quarts of water, stirring thoroughly, till it looks like milk. Let this stand till it becomes quite clear. Pour off the first water, which will contain many impurities, and fill the pitcher with water again, stirring thoroughly, as before. Let it stand once more till perfectly clear, tying a piece of muslin over the top of the pitcher to keep out dust and insects. When all the lime has settled pour off the clear liquid into a stoppered bottle for use, being careful not to disturb the lime at the bottom of the pitcher, and stopping if it becomes the least cloudy. (The first water, which was rejected, is useful for a variety of household purposes, and should be kept in the kitchen. It is useful for rinsing vessels which are liable

to become sour or musty, such as milk-pans and pitchers, tea and coffee pots, etc.) If greater accuracy in preparing the lime-water is desired, the directions of the U. S. Dispensatory are not difficult to follow; *viz* :

Slack one-half ounce lime by the gradual addition of three fluid ounces water; then add one pint water and stir gradually for half an hour. Allow it to settle, and, when clear, pour off, discarding this first water. Then add eight pints water (distilled, if absolute purity is desired, or if the water at hand is *hard*, well-water). Stir well, and after the coarser particles have settled to the bottom, pour the milky liquid, which holds the lime in suspension, into a glass-stoppered bottle, pouring off only the clear liquid when wanted for use.

For all ordinary purposes, the directions first given will be found sufficiently accurate.

A tablespoonful of this lime-water in a glass of water or milk is imperceptible to the taste, and even two or three are not unpleasant. It leaves a peculiar sweet and pleasant taste in the mouth, though if not sufficiently diluted, with milk or water, it will be harsh and acrid.

This has been found very beneficial both to prospective mothers, and during lactation, in hardening their own teeth rendered soft and sensitive from deficient mineral elements; also in hardening children's teeth, and in hastening their development when late in coming into place.

Dr. Royce, in recommending lime-water as a

mouth-wash, says: "a portion of it being taken up by the absorbents, eventually reaches the teeth through the general circulation."

There are, of course, conditions of the system in which lime may be administered in vain, owing to lack of assimilation. This may be indicated by deposits of tartar on the teeth and sediments in the urine, but as a rule, it may be freely used to rinse the mouth and *bathe the teeth* after the use of acid fruits, or lemonade, or strong medicines. Of the effect of acids on the teeth, more will be said in another chapter.

We will now investigate the subject of Food Principles, and endeavor to learn where the essential nutritive elements are to be found in such shape as to be readily digested and assimilated and taken by the little blood-vessels to every portion of the body, "teeth and toe-nails" included.

We must know "what to eat, when to eat, and how to eat."

The human body is composed of thirteen essential elements, variously combined. These same elements are necessarily the elements of the food from which the body is built.

The most simple classification of nutritive principles places them all under four heads: *aqueous*, *saccharine*, *oleaginous*, and *albuminous*.

By the combination of these principles our foods are formed. Milk, the one article of food furnished by nature for the young, contains the types of all



four groups—the *aqueous* as water, the *saccharine* as sugar, the *oleaginous* as butter, and the *albuminous* as casein or curd.

Milk is therefore a perfect article of food, as it contains all the essential principles of nutrition.

In the brute creation, through obedience to nature's laws, the milk is what it should be, and the offspring generally healthy, with sound and perfect teeth.

That the human mother's milk may be what it should be, and her offspring healthy, with sound teeth, her milk must contain the elements essential to these four nutritive principles. Her milk is evolved from her blood; her blood is evolved from her food, therefore her food must contain these elements.

Dr. A. C. Castle said, twenty years ago, "Chemical analysis demonstrates that the natural milk is almost identical with the blood, abounding with the phosphates. Indeed, with correctness, it might be asserted that the difference between milk and blood is in color—the one is white, and the other red."

It is even stated by invalids (to whom warm blood has been prescribed by physicians in cases of extreme debility) that blood can scarcely be distinguished from freshly-drawn milk by the sense of taste alone.

It is not necessary that I should place before you a list of *all* the articles of diet from which we may obtain the elements of nutrition. So generous is nature that no article of diet furnishes but one single element, and so variously has she combined them that we can hardly go astray if we use her gifts aright.

But, alas ! in the refinements of our *higher civilization* we deprive ourselves of her most precious gifts, rejecting ungratefully the very elements most essential to our physical well-being.

The beasts of the field accept her gift with rejoicing, and thrive thereon. The poor savage, in his native wilds, has coarse fare and few comforts, but he is erect and strong, and his teeth are sound and regular.

A well-known writer and dentist says : "I am often asked, when discoursing on this subject to my patients, 'What articles of food ought we to eat, in order to make good teeth?' I answer, everything that grows will make good teeth, if eaten in the natural state, no elements being taken out. Every one of them makes good teeth for horses, cows, sheep and all other animals that live on nature's productions unadulterated."

That you and your children may be strong and your teeth sound, I do not ask you to eat grass, nor do I ask you to go back to a state of savagery, but I do ask you to take your food in the proportions in which nature provides it.

And this brings us back to your question : "Where can I find these elements?" In my next letter I will endeavor to help you answer this question.

## LETTER V.

WHERE THE ELEMENTS OF TOOTH SUBSTANCE ARE FOUND

—CALCIUM.

---

The constituents of tooth substance being what we are chiefly looking for, we will first consider the chemical element, *calcium* or *lime*, the phosphate of lime being, as we have seen, the principal element in tooth substance.

Calcium is generously furnished by nature. It is found in milk, eggs, potatoes and many other vegetables, and fruits ; but specially does it abound in the grains or cereals, the great proportion of our food ; and most abundantly is it found in *wheat*, “the staff of life” ; but, alas ! *not* in the fine, white flour of which are made the snowy loaves of bread, which the good housewife displays with such pride.

Dr. N. J. Bellows, of Boston, speaking of food, says : “It is well-known that our pale-faced girls, and our feeble-minded children, are brought into that condition mainly by living on sugar and butter, and superfine flour to make which the very elements have been taken out that make bone and blood and give energy to the brain and nervous system. The common-sense remedy for all these terrible evils is to be found in a simple resort to nature’s store-house,”

In 500 pounds of *whole grain* (wheat) there is : seventy-eight pounds of muscle material and eighty-five pounds of bone and teeth materials, while 500 pounds of *fine flour* contain only sixty-five pounds of muscle material and thirty pounds of bone and teeth materials.

Prof. Horsford says : “On cutting a thin, transverse section of a grain of wheat, and placing it under a microscope of moderate power, a single row of cells will be observed, in contact with the inner bran-coat, throughout its inner surface. \* \* \* Within this circle of gluten cells, are the starch cells which occupy all the remaining space. \* \* \* The great magazine of phosphates, as well as nitrogenous compounds, is in the gluten cells.” This portion of the wheat grain, which is discarded in the bran bolted out of the pulverized grain, contains the tooth and bone-making material.

Thus, to quote the words of Dr. John Allen, of New York city—a dentist of fifty years’ experience, who has given this subject much attention—in flour, as generally used :—

“We change the proportions of the mineral element (which is deposited in the outer portion of the grain) by bolting out nearly two-thirds of the contents of the grain, and discard it, simply because it is the fashion to have our bread made of the finest flour that it may be white instead of dark.

“It is estimated that a healthy child consumes half a barrel of flour in a year, and if this be fine, white



flour, the child is denied twenty pounds a year of that portion of the grain which contains the proper materials for bones and teeth. This deficiency of the mineral element in the food causes the teeth to be comparatively soft and chalky, and the result is, in this country—where fine flour is principally used for bread—there is not one in twenty without decayed teeth before they have passed the morning of life.”

Flour from the whole grain of wheat, as prepared to-day, is very superior to the old-fashioned “Graham flour,” though retaining the name.

The “whole-wheat” flour of to-day contains all the mineral elements ; the outer coat or husk only is rejected, and the inner coat of the grain, containing the gluten, is finely ground and thoroughly incorporated with the whiter portions or heart of the berry. This changes only the *color* of the flour, and makes it sweet and pleasant to the taste, without giving it any of the unpleasant coarseness of the olden methods, which incorporated the *bran* in coarse flakes, repugnant to all delicate palates, and indigestible to many stomachs.

The color of the bread made from the “Graham flour” of to-day is no more objectionable than that imparted to the finest white flour by the sugar, eggs, spices and other ingredients used in making *cakes*. These are never rejected because of their *color*, whatever may be said of their digestibility, or rather their *indigestibility*.

The “Gluten Flour” manufactured by Farwell &

Rhines, Watertown, N. Y., is rich in mineral elements, consisting of gluten and the phosphates, while as free from starch as flour can be made.

Pure gluten would make a *gum* and not a *flour*, as is seen by chewing a few grains of whole wheat till the starch is dissolved out; the gluten remains in the form of a smooth, soft gum.

Bread made from the "gluten flour" is nutritious and palatable, easily digested and assimilated, and adapted to all the wants of the system, both in sickness and in health. For biscuit, gems and griddle-cakes, it is light, delicate and delicious; it also makes nice loaf-cake and cookies.

It requires rather more yeast powder, but not one-half the shortening used with other flours. A given measure of flour yields a much larger amount of bread or biscuit than the same measure of ordinary flour, with the usual proportion of yeast powders and shortening.

The *directions* furnished with the gluten flour, if properly followed, will produce perfect results.

Though nominally high-priced, it is really an economical flour, as each barrel will make one-third more bread than any other brand of flour, besides being far more nutritious, and possessing special hygienic qualities.

In sickness and debility, a proper diet is the best tonic. To those suffering from liver or kidney troubles, nervous debility, dyspepsia, diabetes, or the milder forms of indigestion, or constipation, this

"Gluten Flour" will be found invaluable as a tonic and waste-repairing food.

A well-known dentist of New York City says:—

"Four years ago I began experimenting with "Gluten Flour" in my family, and in following its use, facts were developed which were wonderful. Scientific analysis of this flour shows that it contains the brain, nerve and bone-forming materials so essential to the building of a perfect human body, for want of which, most people suffer. To the lack of these elements we may also ascribe the early loss of the teeth. If "Gluten Flour" was generally used in place of fine flours in the rearing of children, or for the food of the adult, I think many of the doctors and dentists would be obliged to seek other fields of labor. I speak from knowledge, my own vitality and endurance having been doubled while using it. I would not willingly do without it."

Use "Graham" or "Gluten" flour then, for your bread, your biscuits, and such plain cakes and gingerbread as alone are admissible for children, or for yourself, if you would have health.

Above all, have "*Graham Gems*" for breakfast, instead of hot, white biscuit, battercakes, etc. These can only be properly baked in the cast-iron gem-pans, which come in sets of from eight to twelve shallow cups, joined together in one pan. This should be placed in the oven to heat, previous to mixing the batter. For the batter use only fresh "Graham flour" and cold water, with a little salt;

no lard or butter, but plenty of "elbow-grease," in beating it up, and no yeast-powder or soda. Mix the batter rather thin, and stir rapidly and thoroughly till it is in a foam; then drop it quickly into the hot, well-oiled pans, and place immediately in a quick oven, and you will have a light, sweet, toothsome puff, which can be eaten with impunity by the direst dyspeptic.

If your grocer cannot supply you with this flour, order "The Best Amber Graham Flour" from the "Cascade Mills," of F. Schumacker, Akron, Ohio.

It is preferable not to have a large quantity at once, as in warm weather it readily generates small, white worms and little, black weavils. Get your neighbors to join you in ordering a barrel, and then you will benefit them as well as yourself.

If fine white flour *must* be used, the nutritive elements, lost in the bran, can be in a degree restored by the use of Horsford's "Self-raising Bread Preparation" in place of the ordinary yeast and "baking powders."

The former is put up in two small packages; one of chemically pure bi-carbonate of soda, the other a combination of phosphoric acid with lime and magnesia—the essential constituents of tooth-substance. Each package of one dozen contains the proper measure, and instructions for use. It loses its value and "leavening" properties with age, and should therefore be purchased only from reliable first-class grocers. The two packages are combined in "Hors-



ford's Phosphatic Baking-powder," but this deteriorates very rapidly, and should only be used when known to be fresh from the manufacturers, at the Rumford Chemical Works, Rhode Island.

*Oatmeal* is also an invaluable article of diet, as a source of bone and tooth food.

King's "steam-cooked" and "Hecker's partly-cooked oatmeal" are to be found in every first-class grocery.

A "double boiler" is almost indispensable for properly cooking, not only oatmeal, but also *grits* or *hominy*, which are also good tooth-food, though not equal to whole wheat or oatmeal. A porcelain receptacle, suspended in the tin boiler containing the boiling water, renders *burning* impossible even to the most careless cook, prevents all waste, and does away with the necessity of *stirring*; once placed over the fire, it can cook undisturbed till wanted; indeed, "the longer the better."

Now, if your diet consists largely of milk, eggs, oysters and meat, with potatoes and other vegetables, and an abundance of ripe fruits, supplemented by "Graham" bread in its different forms, and a good bowl of "oatmeal and milk" for your breakfast every day, you will not fare *very hard*, while your system will be well supplied with lime-salts for both yourself and your babe.

If the "Graham" bread should prove really unpalatable at first, you can begin by mixing with your white flour one-third or even one-fourth the quantity

of "Graham" and thus accustom yourself to it gradually. Even so small a proportion will carry with it some benefit, and you will soon learn to like it as well, if not better, than white flour. Mere *taste*, however, is of small consideration, compared with the great interests at stake.

There are some highly-favored portions of our country where these precautions are rendered unnecessary by kind nature. In middle Tennessee, West Virginia, and the "blue-grass region" of Kentucky, the soil, and consequently the vegetation and well-water, is so strongly impregnated with lime as to give a large supply of this element to all articles of food, both animal and vegetable, and a corresponding superiority of tooth and bone-structure to both people and live-stock.

It is well known that the finest horses and cattle in the world graze on the rich pastures of the limestone region of Kentucky, and that her tall, strong men and beautiful women, with their fine teeth, are recognized wherever they go.

We have thus far looked only to *diet* for a supply of lime.

If you are *boarding*, or from any other circumstances cannot control your diet; or if, from long-established habits or constitutional disease, your system fails to assimilate the lime as presented in this form, and your teeth grow sensitive, ache, and decay, from the drain on them in your present condition, you may be obliged to resort to the *doctor* and the

*drug-store* for the same thing in less palatable form.

There are various preparations of the inorganic lime-salts designed to effect the same results and supplement the above *regime*, and which have been found very beneficial when the stomach is too weak, or the appetite too poor, to render *foods* available.

An eminent medical writer says:—

“During pregnancy, many women suffer from caries of the teeth, and dental neuralgia. The calcareous salts required for the development of the foetus must be supplied by means of an increased ingestion of these materials on the part of the mother. If it is not supplied, the nutrition of the maternal bony tissues is affected, and dental caries results. Many pregnant women have a morbid appetite for calcareous and other mineral substances. Preparations of calcium, especially the phosphates and hypophosphates, should, in view of these facts, be administered to *enceinte* females suffering from such dental troubles.”

Dr. Abbott, of New York, says he finds, where children have a repugnance to Graham bread, oatmeal, etc., (which will, however, seldom be the case if the Graham flour is properly prepared, and if good oatmeal is given with plenty of milk), that the “Syrup of Lacto-phosphate of Lime” is to be recommended. He says: “I have given this, even to families of several children; sometimes at intervals for years. It is the simplest form for easy assimilation, and the children will take it just as readily as they will

lemonade. I have had mothers under my care, from seven months before the birth of their children, and administered the lacto-phosphate for weeks at a time, for two or three months. I have had hundreds of cases in which the remedy has been used with fair results."

Dr. Cushing, of Chicago, commends as "a condensed and easily digested form of phosphatic food," the preparation of wheat phosphates made by E. H. Sargent & Co., of Chicago.

Dr. Prothro, of Chattanooga, uses and recommends "Winchester's Hypo-phosphites of Lime and Soda."

There are numerous other chemical compounds, all based on the same general idea, but Dr. J. R. Walker, of New Orleans, after experimenting for a number of years with various medicinal preparations, concludes that equally satisfactory results are obtained by the administration of simple lime-water.

Of course, you will consult both your dentist and your physician before resorting to any of the above medicinal preparations, as there are conditions of the system when lime would not be assimilated, and when its administration would be prejudicial instead of beneficial.



## LETTER VI.

### OTHER CHEMICAL ELEMENTS.

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In this consideration of the elements of tooth-substance, we have thus far devoted our attention exclusively to *calcium*, not only because the phosphate and carbonate of lime constitute by far the largest portion of tooth material (the remaining elements bearing only a very small proportion to the whole) but also because these other elements are found so abundantly in meat, milk, eggs, and other such common articles of diet, that you are scarcely liable to fail in receiving an adequate supply.

The remaining inorganic elements of tooth-substance are principally *magnesia* and *soda*, both of which are found in milk and eggs; the latter we obtain abundantly also from common *salt*—the chloride of sodium. Magnesia and chlorine are also constituents of the blood.

The other elements of the body, and which you supply to your babe in your food, are: *iron*, an important constituent of the blood, and found in nearly all food; *sulphur*, a constituent of the flesh, hair and bones, and found in meat, eggs and nuts; and *phosphorus*, an element of the nerves and brain, and found in the bran of wheat, the yellow of eggs, in potatoes, in fish and in brains as used for food.

*Carbon*, being an essential element of every living tissue, and necessary to animal heat, is an element in all food.

*Hydrogen* and *oxygen*, as combined in water, furnish three-fourths of the weight of the human body.

*Nitrogen* is another essential element ; the various organs of the body and the blood containing at least seventeen per cent.

*Nitrogen* and *oxygen* combined, form the air we breathe, without which there could be no life.

Dr. Ambler says: "Respiration is one of the great functions of all physical life—indeed, breath and life are identical, our vitality being in proportion to our respiration, and it really is quite true that "people die for want of breath;" many only *half breathe*, therefore they only *half live*. Cultivate the *habit of breathing* by expanding the lungs slowly and to their fullest extent, many times daily, in the fresh air.

*Digestion* is effected by respiration and circulation. Should the latter be deficient, the proper amount of blood is not sent to the stomach during digestion ; and should the former (respiration) be imperfect, the blood will lack strengthening power, as good blood is only obtained from good and well-assimilated food, well oxygenated by breathing plenty of fresh air. Thus from good blood, circulation and respiration, we build structures of healthy bone, muscle, nerve and brain."

To illustrate: peas and beans, according to Liebig, readily satisfy the appetite because they are constituted

largely of carbon and nitrogen, but they add nothing to the real strength of the body because they contain no phosphates. Again : starch, sugar, gum and butter contain only carbon and the elements of water, but neither nitrogen nor phosphates. They cannot, therefore, either alone or combined, long sustain life. Arrow-root, corn starch and other similar preparations, so commonly used as infant's diet, make only *fat*, and though their elements are essential to respiration, and may even prolong life for a time, it is only as they are prepared with *milk* that they afford positive nutriment. Liebig says "Children fed on these substances become fat, their limbs appear full, but they do not acquire strength, nor are their organs properly developed."

It is on record that an English mother, some years ago was sentenced to death for *the murder of her child*, because, in spite of the warnings of her physician, she persisted in giving it only these starchy forms of food, and the child died of inanition.

I nearly lost one of my first children, through ignorance on this point. The babe was reduced to such a point of inanition that it was given up as hopeless by physicians, and was only cured by the persistent use of *bran baths* and *bran poultices*, phosphatic food being thus supplied to the child by absorption through the pores of the skin. Every other form of nourishment was absolutely rejected, whether offered through the stomach, or by enemas.

As the body is made of so many different sub-

stances—flesh, bones, blood, brain, hair and teeth,—each requiring different combinations of various elements, considerable variety of food is necessary for the preservation of health and life. Let your diet, therefore, be selected with reference to these principles.

As the same nutritive element is usually found in several articles of food, often both animal and vegetable, select that which your own experience has proved best adapted to yourself in regard to digestibility; where neither has any decided advantage, then consult your taste and your convenience.

Let your food be thoroughly masticated, and well mixed with saliva, before it goes to the stomach, that it may be the more readily permeated and acted on by the gastric juice.

As the *saliva* is excreted by the glands of the mouth, to be mixed with the food in mastication, so is the *gastric juice* excreted by the glands of the stomach, and mixed with the food, to prepare it for the lacteal vessels by which its nutrient portions are taken up and passed into the circulation, to build and nourish the body. If the food is not properly prepared in the mouth by mastication and insalivation, the gastric juice cannot so readily permeate and mix with it, and digestion is rendered more difficult.

Aid your digestive powers by exercise and fresh air.

Regulate your meals so all that is eaten at one time may be digested and passed into the system before a fresh supply is sent to the stomach.

The action of the gastric juice or digestive fluid of



the stomach reduces the food to a succession of *conditions* or *states*.

If fresh food is sent to the stomach, after its work has been going on a while, the work has to recommence for the new food, and that already partly digested is almost certain to *sour* and spoil the whole mass. This is one of the most fruitful sources of indigestion and dyspepsia.

To use a homely illustration, it is much as though you were to put a cake in the oven to bake, and when half done you were to take it out to stir in some forgotten ingredient !

Bear in mind also these general principles :

“Solid food is sooner digested than liquid ;

“Vegetable food requires for its digestion more time than animal food ;

“Animal diet yields a larger amount of nourishment than vegetable (in proportion to bulk);

“Bulk should be in proportion to the nutrient principle.”

Too much rich food overloads and oppresses the system, and clogs the organs in the performance of their functions, while the circulating fluids become too thick and stimulating, and disease follows.\*

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\* For the *facts* contained in these two chapters on “Food Principles and Chemical Elements,” I am indebted to that most valuable treatise, “*Food and Diet*,” by Jonathan Pereira, M. D., F. R. S., etc., a physician of great experience, a most learned and scientific man, and a highly successful writer. His work summarizes the investigations of Liebig, Berzelius, Bischoff, and other eminent chemists, and constitutes a reliable *vade mecum* for amateur investigators, though not including the results of the most recent scientific investigations.

## LETTER VII.

### EFFECTS OF DISEASE ON TOOTH-STRUCTURE. VACCINATION.

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Having learned how to provide your blood with the chemical elements essential to the various tissues of the body, and especially those necessary for the formation, nutrition and growth of the teeth, we reach another important point in the care of those organs *before their eruption*; and that is, the effect of various diseases on tooth-structure.

Dr. Atkinson, an eminent dentist of New York city, says: "Systemic diseases may so derange the nerves as to degenerate the chemical solids of the teeth, and thus destructively affect them. When this occurs during their development, they are impressed at the points indicating calcification at the time, and arrested in growth till the disease has been corrected."

The rapid heart-beat, and the quick throbbing of the pulse, of the infant, are a certain index to the rapid changes taking place in the growing tissues; any interruption in this growth must leave its impress on these tissues. Especially is this true of the teeth, which, like the hair and nails, being *dermal appendages* (of the nature of *skin*), are peculiarly liable to

be injured by skin diseases, accompanied with much fever. You know how dry and lusterless the hair becomes during sickness, and how often it dies and falls out after protracted fevers. You have also, perhaps, noticed grooves and furrows and white spots on the nails during and after severe illness. The hair and nails are growing rapidly all the time, and therefore these effects are promptly visible, and as promptly effaced, with the growth of nails or hair, and their frequent clipping, while the teeth, after eruption, being extremely dense and hard, changes in their texture are slow and are less visible to the eye, as they affect the internal, less dense portions, rendering them, however, extremely sensitive and liable to decay.

But before the birth of the child, while the teeth are growing, such forms of disease as scarlet fever, small-pox and measles, in the mother, or suffered by the child itself after birth, but previous to the eruption of the teeth, leave their impress on those organs as unfailingly as on the hair and nails in after life ; an impress, moreover, which from the nature of tooth-substance is ineradicable.

Another fact ; while disease lasts there will be little appetite, little food will be taken, and even that will not be properly digested ; no new material being furnished the growing teeth, their development will be checked, and, as the final result, the forming enamel will be marred by grooves, furrows, or white spots, showing after the eruption of the teeth the un-

failing and indelible marks of "interrupted nutrition." Guard yourself, therefore, carefully, from all exposure to this class of diseases, before your child is born—if you are not exempt from them by a previous attack, and even then a "second attack" is by no means impossible—and shield your child even more carefully till after the teeth are all erupted.

Dr. Atkinson, before quoted, than whom there is no more eminent authority, further says: "The next point is to prevent the exposure of the child to morbid agents, the contagion of which sets up the various forms of eruptive diseases, such as varioloid and scarlatina; the well-known effects of which are so frequently seen at the point corresponding to the state of development of the teeth at the time children were under the control of the disease."

The grooved, pitted and "honey-combed" appearance of the teeth, resulting from these causes, is not only unsightly in itself, but is a sure precursor of early and rapid decay.

There is another point worthy of serious consideration, the possible effect of *vaccination* on the teeth. One hundred years ago, when this practice was first introduced as a great boon to afflicted humanity, little was known regarding the development of the teeth. The question under consideration was not then raised; in fact, it is only of late years that it has become a subject of investigation. But from what is known of the effects of vaccination on the general system, and from the similarity of these effects, in a



circumscribed degree, to those of small-pox, measles and scarlet fever, in the accompanying "blood-poisoning"—the injurious effects of the latter class of diseases on the teeth being so positively known—it would seem to be only a proper measure of precaution to postpone vaccination till the teeth are beyond any possible danger.

The liability to small-pox for a child surrounded by proper sanitary conditions, and under a mother's watchful care, being a contingency so remote and doubtful, while the danger from vaccination (if any) is direct, immediate and *avoidable*, it is only a wise measure of precaution to postpone vaccination till the teeth have passed the danger-point; and this is—when?

Certainly not till after the enamel of the last permanent tooth is completed, and the wisdom-teeth erupted; for the pitting and honey-combing of even the wisdom-teeth, though not offending the eye as in the front teeth, nevertheless renders them liable to rapid decay.

And even then, can we say that it is consistent with prudence, or that *we have the right* voluntarily to expose the teeth (and the whole system as well) to the disastrous effects of interrupted nutrition? For, while *disease* lasts, there is little or no nutrition supplied to any portion of the body; and in no organ of the system are the results of interrupted nutrition more disastrous than in the teeth.

There are also other diseases, as diabetes, consump-

tion, scrofula, and other inherited taints of blood, which make their unfailing mark on the teeth ; unmistakable to the well informed dentist, but outside of our field of inquiry.

Rev. Dr. Kirkus, of Baltimore, in a recent essay on *Woman*, says : “ By far the most important incident of marriage is *motherhood*, and no doubt many girls are allowed to grow to maturity, and even to become engaged to be married, without any proper warning or instruction as to what motherhood involves. The incredible ignorance of some young wives on such subjects amounts almost to idiocy.”

If, however, more was understood by *young people before marriage*, much entailed suffering and misery might be avoided ; for it is in this sense that “ the sins of the fathers are visited upon the children unto the third and fourth generation.”

## LETTER VIII.

DENTITION AND DISEASE.—DENTITION NOT DISEASE.

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We will now pass over the intervening months till the time when, having given birth to your baby, and having nursed it faithfully at the breast, you are feeling the effects of this drain on your system, and are looking forward to the time when the little pearly teeth, making their appearance, will show that nature is preparing the way for other food.

No *exact* rule can be laid down as to the time of their eruption, as it varies with the general growth of the child.

There are on record instances of children born with teeth in the mouth—Louis XIV of France had two; others who have lived to old age without ever having any teeth at all; others again who have never exchanged the little baby-teeth for the larger, permanent ones; and still others who have cut their first baby-teeth at ages varying from twelve to twenty-six years! These, however, are abnormalities with which I hope your children will never be troubled.

As a general rule, the baby begins “to cut its teeth” (the first two appearing in the centre of the lower jaw) at about six months old—four months

being unusually early, and nine months late. If *dentition* is regular, the teeth will appear in pairs, alternately, below first and then the corresponding teeth above, in the following order:

Two in the centre of the lower jaw, and two above, called *central incisors*; followed by one adjoining on either side, called *lateral incisors*. Of the four latter, the upper usually precede the lower, contrary to the general rule.

These eight “cutting teeth,” when they first appear, are notched, like the edge of a saw, facilitating their eruption, but this will soon wear down; they will usually take their places within a short time of each other.

Then there will be a period of rest, after which the work of dentition will recommence far back in the little jaw, and a jaw-tooth—double-tooth, “grinder”—or, as properly called, *molar* tooth, will appear, one on each side, first below and then above.

There will now be twelve teeth, and the baby will be from twelve to fifteen months old.

After a rest from the serious effort of pushing forward these four large square teeth, the vacant spaces are next filled in with the pointed *cuspid*s, sometimes called *canines* (dog teeth), or—as popularly known—“stomach-teeth” below, and “eye-teeth” above.

By the end of the second, or early in the third year, the full set of twenty baby-teeth, “milk-teeth” (*deciduous* or temporary teeth), should be completed



by the appearance, back of each of the first jaw-teeth, of another grinder or *molar*.

The eight *incisors* and the first four *molars* generally make their appearance without any serious difficulty, if both mother and child have been kept in a state of good general health, by means of proper diet, suitable and sufficient exercise, bathing and plenty of fresh air.

A child ought not to suffer any more in cutting its teeth than do the young of domestic animals; the process is the same in both cases.

Many diseases undoubtedly may, and often do occur, *during the process of dentition*, but it does not follow that *teething* is the *cause* any more than that it is the *result* of these diseases. It is, nevertheless, a sad fact that children frequently suffer seriously when they are cutting their *stomach* or *eye-teeth*, and that the time for the appearance of these is looked forward to with grave apprehensions.

Now why is this? These teeth, having but one point to cut through the gum, it would seem as though the process should be easy, compared with the eruption of the large grinders, and the child, being older and stronger, should be better prepared for it.

There are usually three causes in operation about this time which, singly or together, to the eye of a mother appear to have much to do with causing the sickness and even the death of so many children at this period of their dentition.

One is, that the four sharp little teeth above and below can *bite so hard* and cause the mother so much pain, and the four grinders are apparently so well able to do good work on food (being undoubtedly designed for this work ultimately) that they are put to work *too soon*, and the change from the mother's milk made without sufficient gradual preparation of the delicate stomach.

The baby *wants to bite*, and instead of being given some smooth, hard substance, it is given *crackers* and *sweet-cakes* to bite on. This starchy food sours in the stomach, and gives colic, indigestion and diarrhœa ; or—even when it is apparently well-digested—containing no mineral elements of nutrition, fails to enter the blood, the babies, even when fat and apparently well-nourished for a time, rapidly losing flesh and sinking under trivial disorders—victims to mineral inanition, *not to teething*.

Another efficient cause is, that, as the baby is now creeping about on the floor, or even trying to stand alone by a chair, the long clothing, which has hitherto protected its limbs so thoroughly, is now discarded ; and while the upper portions of the body are still well protected, the lower limbs are almost bare, except little short socks and tiny slippers on the chubby feet, with nothing but short, flowing skirts between the top of the socks—which are half the time kicked off, too—and *a garment* which is but too often wet and cold.

The lower extremities being chilled, the chill

strikes to the bowels, and diarrhœa ensues. Especially is this the case in summer. Let the clothing be as light as you choose, in hot weather, but let it be *of uniform thickness*, and there will be less "summer complaint" and fewer deaths *from teething*.

Another potent cause of disease of infants during dentition is the injudicious methods of life indulged in *by the mother*, in diet, dress and general habits.

The child, reaching an age at which it requires less constant care and attention, the mother gradually emancipates herself from the nursery. The cares of house-keeping and the demands of society are allowed to interfere with the systematic mode of life and regularity of attention paid the child.

The babe, through the mother's milk, being peculiarly susceptible to all influences, both mental and physical, which affect her, the results of fatigue, excitement, grief, irritability, ill-temper, etc., are much more serious to the tender babe than to the mother.

Infants have been thrown into convulsions from nursing while the mother was under the influence of violent passion. In medical works instances are cited where the child has gasped and died in the mother's arms under similar circumstances.

The quantity and quality of the mother's milk are also affected by her food, and its special effects are often more promptly perceptible in the child than in the mother. Food liable to produce flatulency or acidity, as pickles and sour fruits, or cabbage and onions, should be most carefully avoided by the nurs-



ing mother, with special reference to its possible effects on the child, rather than on herself. The same is true of various medicines, such as narcotics, stimulants and purgatives, which are liable to produce their effects on the child, more severely and more promptly than on the mother.

If, from necessity, the child is given into the keeping of a *wet-nurse*, not only her moral character and her general health, but her habits of living—especially in the matter of drink and *stimulants*—cannot be too carefully scrutinized.

Strong, coarse food, as beans, cabbage, onions and pickles, which are likely to be relished by the class of women usually to be obtained as wet-nurses, should never be allowed ; neither should very rich or highly-seasoned diet. Select the food of your wet-nurse as carefully as you would that of your own child.

Were these things more carefully considered, the number of “ deaths from teething ” would be materially lessened.

We will now consider the more legitimate troubles connected with teething :

The teeth, in their development, necessarily crowd and press against the tender gums from within ; this naturally causes swelling, redness and inflammation, especially in the case of the upper teeth. This irritation causes an increased flow of saliva, which is rendered more acid than in its normal state by the abstraction of its alkaline elements to supply the increased demand of the system in developing the teeth. This



should be corrected by proper diet of the nursing mother and the free use of *lime-water*, which is prescribed by Dr. Wm. S. Stewart in his highly successful treatment of cholera infantum.

Acid saliva, in such large quantities, if not counteracted by this simple alkaline treatment, becomes one of the chief causes of the "diarrhœa of teething," so often fatal.

A slight degree of looseness of the bowels should be no source of apprehension. It is advantageous, rather than otherwise, in reducing inflammation, when kept within bounds by judicious diet, both of the mother and the child. *Constipation* is much more to be dreaded, and must be promptly counteracted.

The inflammation of the gums—if dentition be somewhat irregular, and a number of teeth are crowding up at once—may be very severe, and may produce fever. Too much flow of blood to the head, and this, at a period of life, when the brain is very large in proportion, is sometimes a cause of *convulsions*, if preventive means are not employed. Lancing the gums, at the proper moment, is the certain, safe and simple remedy, in the hands of an experienced dentist or physician, who knows just when, where and how to do it.

Another source of intense suffering to many a tender babe is *earache*, a sympathetic result of this inflammation, branches from the same nerve supplying both the teeth and the ear.

The earache, even of a very young babe, is readily

recognized by the way in which it rests its head cautiously against the nurse's breast, its aversion to motion—the slightest movement seeming to increase its suffering—and its pathetic way of carrying the little hand to the ear, involuntarily pointing out the seat of pain. This form of earache is relieved by the same simple remedy—lancing the swollen, inflamed gums, just at the right time, by a competent dentist or physician.

## LETTER IX.

### CARE OF THE TEETH, TEMPORARY AND PERMANENT, IN SICKNESS AND IN HEALTH.

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As you have cared for your baby's teeth, from the very inception of the germs in the dental groove, throughout the period of their formation and growth, so you must continue to care for them after their eruption.

You must see that they are supplied with nutrient elements to complete the growth of the root, and to keep them in good condition.

The baby's teeth, when they first emerge from the coral gums, are like little pearls, white and shining, clean and sound; but they will not long remain so, if watchful care be not bestowed on them.

From the moment the first two teeth appear, give them your personal and special care.

Wash the little mouth carefully, and see that no particles of milk or other food remain lodged in the soft tissues of the lips and cheeks, under the tongue or around the little teeth, to sour and produce fermentation and disease.

Wrap a piece of soft linen round your finger and rub the teeth carefully and gently; remembering that when they first emerge they have but little root,

and are held in place only by the elastic tissues of the gums and the pressure of the tongue and lips, only as the roots grow longer are the sockets built round them to retain them firmly in place.

And right here let me give you a word of caution against allowing the formation of the habit of "sucking the thumb" or fingers, no matter how much it may appear to help in "keeping the baby quiet," for there are, at least, two ways in which this habit is injurious. The teeth not being as yet firmly held in place, the constant pressure of the fingers is liable to push them into irregular positions, interfering with distinct speech, as well as with good looks. *Wind* is also swallowed, in the fruitless sucking, and the stomach unduly distended, causing colics and other disturbances. Especially is this practice liable to produce irregularity of the permanent teeth, if the habit is allowed to become fixed; and even *the nose* is sometimes permanently disfigured, by the *hooking* of a finger over it, to hold the thumb in place during sleep.

As soon as the eight incisors are all in place, procure a soft camel's-hair baby tooth-brush, and begin that regular, systematic care, which alone will preserve them.

Brush them from the gum toward the cutting edge; downward for the upper teeth, and upward for the lower teeth; never brush them in the contrary direction, as that will inevitably crowd the gum back and expose the neck of the tooth, which is not protected



by enamel ; and never brush them *crossways*, as it is of no benefit to the teeth, and will not remove the food from the interstices, but rather pack it in.

When the *molars* appear, brush them in the same way, all round the crown ; and also rotate the brush on the grinding surface, to clean the *wrinkles* in the enamel, which is frequently incomplete in the center ; minute fissures sometimes existing, which allow acids from decomposing food to penetrate the dentine and cause decay.

Care should be taken to remove every particle of food from round and between the teeth, every time anything is eaten, by at least thoroughly rinsing the mouth with clear water. Listerine may be added, which will correct all odors, either of the food itself, or of the breath, if the stomach is at all disordered, or the system feverish. This will also keep the gums in healthy condition.

If acid fruits, lemonade, etc., have been used, lime-water should be substituted for the listerine.

The necessity for cleaning the teeth thoroughly, every time food is eaten, affords an argument for regularity in eating, for children who are eating *something*, all day long, will never have clean teeth. The child should also be provided with a tooth pick and taught to keep it always within reach, after solid food is allowed, such as is liable to become wedged between the teeth. Use also a strand of floss-silk, or a light rubber ring, to pass between the teeth, from the gum down, to dislodge particles of food,

The teeth should be brushed, and the mouth washed, as described, the last thing at night, to remove any possible remnants of food, and the first thing in the morning, to clean them of deposits from the fluids of the mouth, which accumulate during the quiet hours of rest. This accumulation is prevented during the day by the motion of the lips, tongue and cheeks.

Children should be carefully trained to sleep with the lips closed, and any indication of the stoppage of the nostrils, from colds or incipient catarrh, should be promptly remedied, as breathing through the open mouth, when awake or asleep, is not only unsightly, but very injurious to the teeth, rendering them liable to early and rapid decay, from the varying temperature of the air thus circulating round them.

The same care and treatment that will preserve the baby's teeth, will also preserve teeth at all ages ; but you must care for your baby's teeth *yourself*, and only very cautiously and gradually entrust this important duty to the child, and then, only under your own eye, for a long time, till you are sure it will be regularly, thoroughly and systematically attended to.

Especially in *sickness* should the greatest care be taken of the teeth, for then the fluids of the mouth are in an unhealthy condition, and liable to injure the teeth ; for these organs are integral parts of the body, participating in the effects of general diseases, suffering from lack of nourishment, and deficient in power of resistance.

The condition of the teeth, after a long illness, usually attributed to *strong medicines*, is very largely due to the neglect of the teeth at that time.

The *homœopathic* patient is apt to find his teeth in fully as bad a condition as is the *allopathic* sick man, if no precautions are taken in either case.

“The vitality of the individual has much to do with the matter of decay of the teeth. Fevers enfeeble the system and favor decay. Don’t blame the medicines. The acids your physician administers correct the vitiated conditions in the system, so that if the teeth suffer it is probably in spite of his medicines, rather than because of them.”

If the patient is unable to bear a soft brush (and *never* use a hard one under any circumstances), the mouth must be frequently rinsed with clear water, with lime-water, or, if the mouth is foul and the breath offensive, with a disinfectant or antiseptic mouthwash. For this purpose there is probably nothing better than LISTERINE, which is pleasant to the taste, imparts an agreeable odor to the breath, and a refreshing coolness to the mouth. It is also perfectly safe, being free from all poison. It may be used simply as a mouthwash and gargle, or taken internally, where there are offensive eructations. And when we say listerine, of course we mean Lambert’s Listerine.

A soft rag wrapped round the finger will do much to remove injurious deposits. If concentrated acids, as *elixir vitriol*, or the *muriatic tincture of iron*, are used as medicines, they will only corrode the enamel

if *left* in contact with it. A neutralizing mouthwash, thoroughly used, will be more effective in preventing bad results than the use of glass tubes; though *both* are better than either alone. Where the saliva is acid from disease, *prepared chalk*, rubbed in round the necks of the teeth and between them, and left there through the night, is very beneficial; rinsing with *salt* water is also purifying.

Other conditions of the system, giving peculiar odors to the breath—recognized by the physician or nurse, if not by the patient—as *ammonia*, (to which is attributed white decay, and deposits of *tartar*, and requiring preventive washes of dilute acids, as well as acids internally); or the odor of *sulphuretted hydrogen*, (supposed to be a symptom of the causes which produce black decay, and demanding washes of *chlorate of potash*, or of *salicylic acid*), come within the province of the *physician*, who should be familiar with these signs and consider the effects of both disease and medicines on the *teeth*, as well as on the other organs of the body, and warn both patients and parents how to prevent the ravages which the *dentist* will otherwise have to repair.



## LETTER X.

### WEANING.—INFANTS' FOOD.

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There is one important point that we have not considered in connection with the eruption of the baby-teeth, and that is : *What food* is best suited to the infant's stomach, during the transition from mother's milk to a regular diet of solid food ?

The first of all food is, of course, *milk*. The difference between pure, unadulterated cow's milk, and the milk of the human mother, lies mainly in the larger proportion of *sugar* in the latter, and the smaller proportion of *caseine* ; cow's milk forming a more tough and indigestible curd. The most eminent of the more recent authorities on the subject of Infant Diet, however, authorize the free use of cow's milk, if it can be made a matter of certainty that it is pure and unadulterated.

Milk from the Jersey and Alderney breeds is too rich in cream for the infant stomach ; the Ayrshire and grade cows furnishing a fluid more nearly resembling human milk. Milk for an infant should be from the same cow ; and she should be young and healthy, supplied with good pasture, sweet, clean feed and pure water, kept quiet and gentle, and in good condition.

When such milk cannot be obtained, and it is rarely possible in large cities (and not always even in the country), Dr. E. N. Chapman, in his valuable work, entitled "*Infant Diet*," says that the nearest approach to mother's milk, "with the addition of the valuable properties of lime," is prepared as follows:—

"Take of condensed milk two teaspoonfuls; water twenty-four teaspoonfuls; lime-water, four teaspoonfuls; powdered sugar, half a teaspoonful; salt, a small pinch.

"Having brought the water to a blood heat, measure the milk accurately by dipping it out with one spoon and pouring it into another, and then thoroughly mix and stir the several ingredients together.

"If milk, fresh from the cow, be used instead of condensed milk, it should, if to a certainty unadulterated, be diluted in one-half water, and then the other ingredients added.

"If a bottle is used, fit it with a black rubber nipple instead of the white, (which is poisonous being whitened with arsenic), and draw a half teaspoonful of spirits, diluted with water, through the rubber after each feeding; this prevents fermentation, but the nipple should be renewed frequently, as it is difficult to keep it clean and sweet."

Of the different ingredients thus combined he says:

"A long series of experiments warrant the following conclusions:

“The constituents of milk are blended in condensed milk, as when fresh milk has been scalded: (*not boiled.*)

“Condensed milk, owing to this change, and the removal of a portion of the caseine in the process of condensation, is better adapted to the stomach of an infant than milk fresh from the cow.

“Both plain and condensed milk are, by the addition of a proper proportion of lime-water, closely assimilated to mother’s milk, the caseine being held in emulsion till the milk has been intimately mixed with the gastric juice, and then it is precipitated in such a state of minute division as to be readily digested.

“Salt aids in the stability of the emulsion and in the solution of caseine and in some way, not well understood, promotes digestion, absorption and assimilation. Sugar of milk is another essential element.”

Dr. Chapman is very decided in his opinion of the value of *lime-water*, saying in another place:

“Lime-water and milk is not only food and medicine combined for the infant, but is equally invaluable later in life when the functions of digestion and assimilation have been seriously impaired. A stomach taxed by gluttony, irritated by improper food, inflamed by alcohol, enfeebled by disease, or otherwise unfitted for its duties, as is shown by the various symptoms, attendant on indigestion, dyspepsia, diarrhoea, dysentery and fever, will resume its work,

and do it energetically, by an exclusive diet of lime-water and milk. A goblet of cow's milk, to which four tablespoonfuls of lime-water have been added, will agree with any person, however objectionable the plain article may be, will be friendly to the stomach when all other food is oppressive, and will be digested when all else fails to afford nourishment.

"The blood being thin, the nerves weak, the nutrition poor, the secretions defective, and the excretions insufficient, nature here offers a remedy as common as the air, almost as cheap as water. In it all the elements of nutrition are so prepared by nature as to be readily adapted to the infant or to the adult stomach, and so freighted with healing virtues as to work a cure when drugs are worse than useless."

Prof. Leeds, of the Stephen's Institute, has recently given the following formula as the best possible food for infants who for any reason are deprived of their natural nourishment: "Take a pint of good cow's milk, add to it a pint of water; then add two ounces of cream and 400 grains of milk sugar."

Oatmeal furnishes a valuable article of infant diet, prepared as follows: One cup of oatmeal to a quart of water, soaked over night and then boiled till it thickens perceptibly; strain, sweeten, and to half a cupful add an equal quantity of either condensed milk, prepared as above, or pure cow's milk, gradually reducing the milk, as the babe becomes accustomed to the oatmeal gruel.

If the child is inclined to constipation, "Nestle's



Mother's Milk Substitute—Lacteous Farina"—or "Mellin's Food," will be of inestimable value.

Porridge or pudding, made from Farwell & Rhine's "Gluten Flour," offers a delicate form of infant's food which is exceedingly nutritious and easily digested.

This flour is equally valuable to the expectant or the nursing mother, as a "brain, bone and muscle food."

When the baby *wants to bite*, give it oatmeal or graham crackers as food, instead of sweet cakes or fine-flour biscuits, or soda crackers; an ivory ring or alligator's tooth is better than either, between meals.

The juice from a tough strip of lean rare or raw beefsteak, long enough to be held firmly while sucked, is easy of digestion, and very nourishing.

Soup, too, is good, but it should be a clear broth, not too strong, and without vegetables, though it may be whitened with rice or barley, and strained.

A little later, eggs are suitable; also sweet or Irish potatoes, finely mashed and made of the consistency of cream, with milk and lime-water.

Gradually add other articles of light, easy digestion and good nutritive qualities, including fruit-jellies and ripe fruits free from seeds or skins, watching closely the effects of each new article of diet: not till after the molars appear, adding the solid food which then becomes necessary for the exercise and strengthening of the teeth.

Do not be anxious to have your baby *too fat*, for *fat* is not *flesh*. Abnormal fat is as much out of place, and as little to be desired, in a baby, as is a *fat man* or a *fat horse*.

After the twenty teeth of the first set are in place, govern the diet of your child by the general rules laid down in the preceding chapters for the regulation of your own diet, and you cannot go astray.

An important point to be borne in mind with regard to this period of life is that children require food more frequently than older persons.

At this period of rapid growth and development, all the functions of life—respiration, circulation and digestion—are proportionately rapid, as indicated by the heart-beat and the pulse.

Pereira says: "In children the functions of nutrition are more active than in adults. They have not merely to repair the daily waste—that is, to renovate their tissues—but *to promote growth*. Their functions of circulation and respiration are, therefore, more active than in after life, and they require food—that is, substances to support the process of respiration—to be administered at shorter intervals."

Food containing large proportions of carbon and hydrogen furnish the elements of respiration or serve as "fuel to be burnt in the lungs."

Children therefore require a larger proportion of such food than adults. Arrow-root, tapioca, sago, and other starch-foods, supply the elements of respiration, or fuel for the lungs *only*, however, and

though important for this purpose, must be supplemented with food containing nitrogen and the phosphates—as milk and the cereal grains, wheat, oatmeal, etc.—to furnish the elements for the growth of bone and muscle. But I have already endeavored to make this plain to you in a preceding chapter. The same general rules that were laid down for the regulation of your own diet, with the above exceptions, should govern your child's. With sufficient sleep, systematic diet, regular meals (five a day, gradually reduced to three), fresh air and suitable dress, the baby, unless exposed to contagions, or subject to hereditary diseases, may be kept in health and the baby-teeth preserved intact, till nature is ready to replace them with the permanent set.

## LETTER XI.

### WHY THE BABY-TEETH SHOULD BE PRESERVED.

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We will now consider *why* it is a matter of the greatest importance that the baby-teeth—which are eventually to be replaced by larger, stronger, better teeth—should be preserved in all their integrity till, having done their duty, nature removes them, one by one (as their successors are ready to come forward) by a most beautiful process—one of the most wonderful in the human economy—namely, the absorption (or gradual wasting away) of the roots. The crowns then detach themselves from the gum and fall from the mouth, having fulfilled their mission without ever having caused a moment's pain or suffering to the happy child. But this can only be where the teeth are of good material and have received proper care.

How different with the teeth of those unfortunate children whose mothers, through ignorance or neglect, allow the little pearls to lie embedded in the foul remains of decaying food, corroded by the gases from a stomach overloaded with unsuitable, indigestible, unmasticated food, till they are absolutely rotted away to the exposure of their nerves, entailing the most cruel tortures of *tooth-ache*, day after



day and night after night, till, mid shrieks of agony, the teeth are extracted.

When the baby-teeth loosen and fall out, in nature's own time, they have no roots, but, when they are extracted prematurely, the roots are long and firmly attached. The first molars (so often mistaken for baby-teeth, and allowed to decay as such) have roots even larger and more divergent than in the other permanent teeth.

The tooth, being frail from decay, offers no firm hold to the instruments of the dentist, and, as it is usually supposed that *anybody can pull a baby-tooth*, the young, tender jaw-bone itself is often injured in these attempts at premature extraction ; or, the tooth being broken, the roots are left in the jaw to decay, causing gum-boils, and forming an obstacle in the path of the permanent tooth, which is thus forced out of its proper position, causing irregularities and deformity. The loss to the child of the organs of mastication is also a serious one.

The stomach being overtaxed by unmasticated, indigestible food, the general health must suffer. Assimilation being imperfect, nutrition is impaired, and the growth and development of all the organs checked.

Dr. Thomas Gaddes, editor of the English *Dental Record*, says : " To the child whose diet consists in part of solid food, the temporary teeth are as valuable in preparing that food for digestion, as are the permanent to the adult. Indeed, it is more impor-

tant that the child should have teeth necessary for performing well the first part of the digestive process, for, if a child—say four years old—be deprived of a few of them, and if it be allowed solid food that it cannot masticate, it is inevitable that, by the greater excitability of its nervous system in early life, its delicate digestive apparatus should be deranged, and diarrhoea, convulsions, or reflex disturbances result.”

Dr. Gaddes also refers the great loss of life among children, to the use of improper food, imperfectly prepared for digestion, through defective teeth, or the want of them.

Dr. Burkholder, of Virginia, says : “ By so much precisely as the power of mastication is reduced, and its proper performance hindered through the loss of teeth, by so much will the process of nutrition, and healthy, vigorous, perfect structural formation be impaired.”

If the decay is allowed to go on till suppuration takes place, and an abscess (or *gum-boil*) is formed, the growing germs of the permanent teeth are liable to be injured (or the growth of the roots entirely checked, if they are already well advanced toward eruption) by the inflammation of the surrounding tissues.

Decay being allowed to reach this point, the “nerve” being destroyed, the *tooth is dead*, and usually no further absorption of the root takes place. It then becomes an obstacle in the way of the new

tooth, which is forced to make its way out at some other point, inside or outside of the arch, thus producing irregularity of the permanent teeth.

Another reason why the deciduous teeth should not be allowed to decay, is the effect their premature extraction has on the space to be occupied by the permanent teeth.

After a tooth is extracted, nature has no further use for the empty socket, *as such*, but, as it contains valuable mineral elements, *building materials*, it is soon taken down, as it was built up, cell by cell, and the materials taken into the circulation, to be used again in building other organs requiring the same elements—perhaps even contributing to the growth of the permanent teeth now rapidly advancing.

The teeth being held in their upright position partly by the lateral pressure exerted by one against another, the bony walls of the socket of the lost tooth having disappeared, the pressure from the remaining teeth on those adjoining the vacant place, meeting with no opposition, gradually crowd them over into this space, which is sometimes thus entirely obliterated.

When this occurs in several different places in the mouth, the consequent loss of space cannot fail to be disastrous to the regularity of the permanent teeth.

If more teeth are removed from one side than from the other, which is very apt to be the case, the unsisted strain of the powerful muscles on that side of the

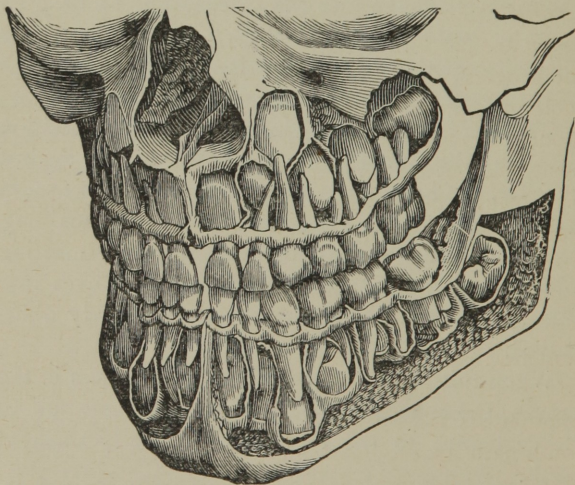


face will draw even the lips and the nose to one side, producing distortion of the face and marring its beauty forever.

Even if extraction be equal on both sides, the consequent shrinkage will give an aged look to the young face, that is painful and unpleasant.

Thus arguments almost *ad infinitum* can be urged for the care and preservation of the deciduous teeth.

Therefore, let the minutest cavity of decay be filled promptly, however young your child may be, when the little black speck shows.



Reference to this cut will farther illustrate the close relation of the temporary to the permanent teeth. At first view, this cut seems to represent a



heterogeneous mass of teeth of all sizes and shapes, with no order or regularity of position, maturity, or design. A little study, however, will show all this apparent chaos to be a wonderful system of harmonious growth, culminating in one of the most interesting and useful developments in our economy. From a seeming confusion comes the exact, stately tread of a marshaled host; each knows how and by what path to advance, and all stepping into position at the precise time and place appointed, appear in the order just adapted to the respective duties assigned them. When we look behind the curtain, as we are permitted to do in this picture, and see the process of preparation, we wonder, indeed, how such an impact of fifty-two teeth in such an infant mouth can ever come into order and uncrowded position; but we wonder still more, when they appear bright, beautiful and matured, each knowing so well his place and work and so precisely prepared to do it.

By this cut will be seen more clearly, too, how necessary it is to retain the temporary teeth till the permanent are ready to take their places; for when a temporary tooth is prematurely removed the bone which surrounded its roots becomes absorbed, and the honey-comb path for the incoming permanent tooth is obliterated. Besides, the expansion of the jaw at this point is measurably discontinued for a time, so that the larger incoming tooth is not able to take its proper place.

## LETTER XII.

### FILLING THE BABY'S TEETH.

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You will perhaps laugh and think I am joking, if I tell you that one of my children had a tooth filled before he was one year old. But it is a fact. The little fellow was about nine months old when the "upper central incisors" (or first upper teeth in the center of the jaw) came through. I soon noticed that one of them was marred by a little round yellow spot on its face, near the cutting edge. In a few weeks this formed a cavity of decay. Fearing the toothache for my tender babe, when he was eleven months old I seated myself in the chair of the dentist, with the baby *sound asleep in my arms*. Holding the upper lip out of the way with my finger, with keen instruments all the decayed portions were removed so deftly that the babe never stirred nor woke, and the cavity was filled with "white filling."

The babe had the whooping-cough, however, at the time, and being seized with a paroxysm during the operation, the filling became wet before it had time to harden, and did not prove durable.

At the age of thirteen months the tooth was therefore again filled; the baby being wide-awake and sitting alone in the big chair (with a little chair in

it) apparently enjoying the honor conferred on him, and occasionally demanding to "thp it" as he had seen the preceding patient do.

This preserved it till the age of three years, when the tooth having worn down from the edge, the filling fell out. The cavity being white and clean, no further decay having taken place, it was again filled; this time with gold; which preserved it perfectly till the tooth fell from the gums at the proper time, with the root well absorbed.

As illustrating the effect that injuries to the first teeth may have on the second, I will add that the permanent tooth which replaced that defective one, has a similar but white spot on it, which, however, shows no tendency to decay, and is the *only blemish* in the otherwise perfect full set of teeth of a boy now eighteen years old, and in whose case the system laid down in these letters has been fully carried out.

Therefore, I say again, carry your child early to the dentist, that the very first symptoms of decay may be detected and checked. It will not do to rely on your own judgment as to the real condition of the teeth. Decay is so insidious, and due to so many remote and perhaps hereditary causes, that, notwithstanding all your care, it may obtain a foothold all unsuspected by you, to be discovered only by the trained eye and delicate touch of the instrument of the skilled dentist.

The integrity and regularity of the second set, as well as the health of your child, depend so much on

the condition of the first set, that there should be no guess-work about these baby teeth.

Take your child, therefore, regularly to the dentist every few months after it has a mouthful of teeth. Being already accustomed to your frequent examinations of the teeth, with mouth glass, tooth pick, and silk floss, the child will have no foolish dread of the same process at the hands of the dentist, with whom he should already be familiar as a friend of the family. Should the child, however, manifest any fear at the unaccustomed sight of the dentist's instruments, at a hint from you, any reasonable man will willingly use *the tooth pick* in the first preliminary examination, till the child's confidence is won ; and this is a great point gained, even if nothing more be done at the first sitting.

Unless you have neglected your duty in the care of the teeth, they will in all probability be in such good condition that no operations will be required.

The child not having been hurt, will willingly return for subsequent examinations, especially if taught that this course will be likely to prevent future suffering from the teeth, such as he will doubtless often witness in his less fortunate companions.

This is, therefore, another reason why you should attend to your child's teeth regularly, and accustom it to frequent and thorough examination, that it may have no fears when taken to the dentist for the same purpose.

Have a clear understanding with your dentist, from



the beginning, that those teeth are to be henceforth under his special charge; that, feeling your need of his advice and co-operation in their care, you intend conscientiously to second his efforts for their preservation, and that you share with him the responsibility of their integrity. With such an understanding the charges for mere examination at regular intervals will be light; and there will rarely be any necessity for anything else, in a large majority of cases, if the precepts herein laid down are faithfully followed.

Dr. Homer Judd sums up the reasons for all this care of the baby teeth as follows :

- 1st. Because they are needed for daily use.
- 2d. Because it will prevent a great amount of pain and sickness.
- 3d. Because by these means the nutritive process will be carried on better, and, as a consequence, the health, growth and development of children will be better than would be if the teeth were prematurely lost, and a better development of all parts will be thus attained ; and
- 4th. Because \* \* \* the proper care and retention of the deciduous set will exert a salutary influence on the permanent teeth.

## LETTER XIII.

### ERUPTION OF THE PERMANENT TEETH,

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When your baby's first *big jaw teeth* came in, at the age of perhaps twelve months, they were apparently as far back in the little jaw as a tooth could well be placed; yet, as the child entered its third year, you found there was then ample space back of it for still another big tooth; the jaw having evidently *lengthened* to the rear, the front teeth still holding their fixed places and relative positions.

Caring for your child's teeth yourself, as I am confident you will do, you will note all the changes that occur from time to time, and consequently will find that the jaw continues to *make space* back of the teeth, till at about the age of six years, still another new tooth will make its appearance beyond the two baby molars.

*You* will not be liable to suppose, as do many ignorant mothers, that there are *three jaw teeth* in the baby set (and "their decay immaterial, because they are all to be replaced"). *You* will know that this new comer *cannot* belong to the baby set of twenty teeth, and also that merely *replacing* this latter number will not afford the thirty-two which make the permanent set. Yet there are many otherwise

intelligent persons who suppose that all the permanent teeth have predecessors in the temporary set—at any rate, all but the wisdom teeth, but even the addition of the four “wisdom teeth” with which all are familiar, would make but twenty-four. When, where and how do the eight others come?

These new teeth, coming at about the age of six years, are the first molars (jaw teeth) of the permanent set, frequently called the “sixth-year molars,” from the age at which they make their appearance.

Dr. Welchens calls these sixth-year or first permanent molars, the “corner stones of the arches; the outposts and main supports of the whole process of second dentition.”

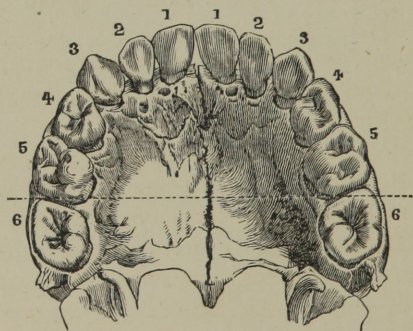
These teeth are of special importance, for several reasons: In the first place, they are ready for service while the baby teeth are being lost and replaced; and in the second place, they are the largest teeth in the permanent set and in the center of the arch; therefore, the principal blocks in the whole wall. They are also exactly opposite the duct (or aperture) which furnishes the largest portion of saliva. Food masticated on these four teeth receives, therefore, an abundant supply of saliva and is consequently well prepared for the stomach.

As they are more liable to early decay than any of the later teeth, they must receive special care; and on the first slight appearance of decay, be promptly filled, and, if necessary, *refilled*.

Dr. Wm. H. Dwinelle speaks of these teeth as

being “the largest of all the molars, and appointed to the post of honor of bridging the critical and dangerous gulf between youth and maturity; and as making normal mastication possible while the temporary teeth pass away and are succeeded by the remainder of the permanent set.”

Watch for these sixth-year molars, then, and give them your most careful attention. They are liable to be less dense than the other teeth, and may require filling and refilling; but they are of sufficient importance to justify it, for with proper care and suitable diet they will improve in texture as they grow older. Reference to the cut below will clearly show the position of the teeth.



1, are central incisors; 2, lateral incisors; 3, cuspids; 4 and 5, temporary molars. All, but the 4 and 5, are succeeded by permanent teeth of the same name; 4 and 5 (temporary molars) are replaced by first and second *bicuspid*s, teeth differing in shape and



size from any found in the temporary set. 6, are the first permanent molars which do not belong to the deciduous set.

By reference to the above cut, you will be able to discern more clearly between the ten temporary teeth in a child's jaw, and the first permanent molar. All these ten temporary teeth, with the ten in the lower jaw, have successors, but these two permanent teeth, and the other four, two on each side, which in time come behind the line drawn in the cut, come but once. So that, with the six which come in the lower jaw, there are twelve that have no successors.

After these four teeth have come into place, the little "baby teeth" soon loosen and fall out, one after another.

The temporary teeth are exchanged for permanent teeth in about the same order that they erupted, but in about twice the length of time.

This *replacement* is preceded as we have seen, by the eruption of these "sixth-year" or first four permanent molars (or jaw-teeth) and followed, as you will find at about the age of from eleven to thirteen, by four others, still further back, as the jaw has again extended in length—the latter being known as the "twelfth-year" or second permanent molars. The six years intervening between the eruption of these additional eight jaw-teeth are occupied in exchanging the twenty baby-teeth for twenty permanent teeth; none of the *replacing* teeth being double teeth or molars. The twelve large jaw-teeth, three on each

side, above and below, are all additional to and in the rear of the twenty baby-teeth.

The eight incisors (or central front teeth) should all be exchanged for similar teeth, but larger and stronger, by the time the child is nine years old.

Then—passing over the upper canines or eye-teeth, as was the case with their eruption, the eight baby-molars are exchanged—not for new molars, but for a class of teeth, not found in the first set ; they are called *bicuspid*s, from their form (*bi*, two ; *cus*p, a point or prominence)—the eye-teeth or *cuspid*s, having one cusp, and the bicuspid>s two.

These bicuspid>s, being small *half-double* teeth, are frequently pointed out to the dentist by would-be-wise patients as evidence of not having yet shed all the baby-teeth !

The eight bicuspid>s being usually in place at about the age of twelve years, the eye-teeth are next replaced by others of the same shape, but larger and stronger ; the twelfth-year molars make their appearance (sometimes while the canines are being exchanged,) the eruption of the third molars (or wisdom-teeth,) completing the full adult set of thirty-two teeth, without which no mouth is in perfect condition to provide for all the wants of the system. The time of the eruption of the wisdom-teeth varies from the ages of fifteen to fifty years of age ; and they are sometimes the cause of severe suffering from not having sufficient room developed in the jaw for their occupation ; often because the jaws and

teeth have not been properly exercised in mastication.

An Arab proverb reads: "He who does not masticate well is an enemy to his own life."

No arguments for the care and preservation of the permanent teeth need be adduced beyond those already given in regard to the temporary.

"Their preservation and usefulness for speech and mastication till advanced life; the favorable impression made on the general appearance by the ability to thoroughly masticate the food; the comfort of a pure breath and wholesome saliva; and the agreeable effect produced on others by the exhibition of a clean and healthy mouth, are surely reasons enough to induce all to pay that attention to them on which their appearance, preservation and usefulness depend."

The suffering endured in masticating food with sensitive or aching teeth, and the inconvenience consequent on the loss of a number of them "can only be appreciated by those who have been unfortunate enough to have had some experience in this direction." Speaking with distinctness and comfort depends much on a full and even set of teeth. If they are crowded and irregular, or if there is here or there one missing, it affects the voice at once and is very annoying to others who are obliged to listen. Public speakers often without being conscious of it fail to produce the effect they desire on their hearers from this cause. Nothing contributes more to the beauty of the features than a perfect, regular, clean set of teeth; while a neglected, filthy, diseased mouth is painful to all beholders.

The opinion is held by those who have given this subject the closest study, that "on an average, life is shortened one year for each tooth lost. How important then the preservation of every tooth in a healthy and working condition! The hygienic care of the teeth is so *understandable* and simple that no one is excusable for not carrying out its indications most perfectly.

"When disease has attacked the *teeth*, usually but little concern is felt about it. If the *eye* or the *ear* becomes diseased, the utmost solicitude is at once manifested and no effort for restoration is left untried. Time, money and the highest skill are all called into requisition—and used lavishly, too, if a cure can be obtained—and yet the loss of an eye or an ear, usually will not affect *the system* at all. But the teeth may become diseased and the patient suffer for months and years, and even sicken and die without any one considering that disease of the teeth could exercise any influence beyond the cavity of the mouth, while the truth is, when the teeth are diseased, every organ and every fiber in the body suffers as a consequence."

According to the last United States census, only one person in eighty has sound teeth; and those who have made a study of these things say that one hundred years ago one person in every twenty-five had perfect teeth, while two hundred years ago the proportion was one in ever five!

What a comment on the enlightenment and culture of the nineteenth century!



## LETTER XIV.

### CAUSES OF DECAY. PREVENTION.

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And now, a few words as to the better understood and more avoidable *causes* of the decay of teeth, and the possibilities of the prevention of caries.

Dr. Marvin, of Brooklyn, N. Y., says :

“Purely preventive treatment must begin far back, antedating birth, conception, marriage. In the girlhood of the yet future mother, instructions should be given which, if followed, will secure uniform physical development, perfect nervous balance, a healthy circulation, good digestion—in a word, robust health. This is the time for, and this *is* preventive treatment. It consists of nutritious diet, regular habits, open air exercise—such as employs all the machinery of the human frame, as walking, horseback riding, rowing ; a style of dress which does not distort or hinder the free action of any part, or weigh unduly on the abdomen, or overclothe one part, leaving another unprotected ; regular and consistent habits of thought ; the cultivation of equability of temper, and sufficient sleep at the proper hours for sleep.

“Such habits of life, many of which I know are not *fashionable*, will prepare a woman to transmit to the

children she may bring into the world, an inheritance of incalculable value and permanent duration.”

This is but another way of saying what I have been urging from the first, in these letters; for what will give robust health will give and maintain good teeth.

You ask, then, why do the teeth decay?

Let us look at their natural surroundings:

They are implanted in a fibrous tissue, covered with a membrane which secretes large quantities of mucus; they are kept constantly at a comparatively high temperature; they are constantly bathed in the fluid secretions of the mouth, which, in health, are alkaline, or neutral; when diseased, they become acid;—

*Therefore*, endeavor to keep yourself in good bodily health, and your teeth will not decay from diseased or acid oral fluids.

You know that when acids—such as lemon-juice, vinegar, or strong medicines—are accidentally spilled on the marble top of your sideboard, washstand or bureau, it is permanently injured if they are allowed to remain there; the fine gloss is destroyed, the surface roughened, and if a round drop stands long a little pit is formed.

Now, marble is one example of *lime* formation, and your teeth is another. All *acid* foods, fruits, drinks, medicines, toothwashes or powders are, therefore, injurious to the teeth if allowed to remain about them.

“Most people have experienced what is commonly called ‘teeth set on edge.’ The explanation of it is, the acid of the fruit that has been eaten has so far

softened the enamel of the tooth that the least pressure is felt by the exceedingly small nerves which pervade the thin membrane connecting the enamel and the bony part of the tooth. Such an effect cannot be produced without injuring the enamel. True, it will become hard again, when the acid has been removed by the fluids of the mouth, just as an egg-shell, that has been softened in this way, becomes hard again by being put in water. When the effect of sour fruit on the teeth subsides, they feel as well as ever, but they are not as well. And the oftener it is repeated, the sooner disastrous consequences will be manifested:”—

*Therefore*, rinse your teeth promptly and thoroughly, with an alkaline wash (simple lime-water is good) to neutralize all such acids; and your teeth will not decay from *this* cause.

*Food*, of any kind, if allowed to accumulate round and between the teeth, will, in the natural high temperature of the mouth, *ferment* and generate acid gases, which will cause the teeth to decay;—

*Therefore*, keep your teeth scrupulously clean, and free from all particles of food, and they will not decay from *this* cause.

*Cracking nuts* and *biting threads*, will fracture the enamel and allow acids to penetrate to the dentine, inducing rapid decay; also allowing ingress to the *germs, bacteria*, and what not, which are supposed by some, to run riot in the animal tissues of the teeth;—

*Therefore*, do not crack nuts or bite threads with your teeth, and they will not decay from *this* cause.

Very *hot drinks* and very *cold drinks* will have the same effect on the enamel of your teeth, that the same sudden changes of temperature would have on a fine glass goblet ;—

*Therefore*, do not expose your teeth to these changes of temperature (as, for instance, a cup of very hot tea followed by a glass of ice-water), and your teeth will not decay from *this* cause.

Dr. Richardson (of the Odontological Society of Great Britain) thinks that one of the most efficient causes of the decay of the teeth is found “in that form of dyspepsia induced in early life by improper feeding, especially in the substitution of artificial foods for the natural breast milk. \* \* The child, deprived of its natural and admirably adapted food, and supplied with nourishment which its stomach cannot digest, nor its body assimilate, its tissues, generally, are imperfectly constructed, and though it may retrieve in after-life some of the harm thus inflicted, in the tissues which are constantly undergoing reconstruction, in such dense structures as the teeth, perfection is impossible if the start is bad.”

Another frequent cause of decay and irregularity of the teeth lies in the inheritance of incongruous jaws and teeth from the two parents. The *father*, having large teeth in a large jaw, and the *mother* small teeth in a small jaw, though both may have perfect



sets of teeth, the inheritance may, nevertheless, be most unfortunate for the children. The *teeth* being, as a rule, inherited from the *father* (Drs. Winder and Coy say eight times in ten) and the bones—including, of course, the jaw—from the mother, the inherited large teeth of the father being crowded into the small jaw inherited from the mother, the teeth of the children will, probably, be irregular and overlapping, and cleanliness very difficult. Being thus crowded, they will be imperfectly nourished, and consequently doubly doomed to early decay, from lack of cleanliness, and lack of nutrition.

But these things are rarely taken into consideration when young people *fall in love* and marry; *a little rose-bud mouth* is *so lovely* in a woman's face!

Reverse the case, and let the father have small teeth, and the mother a large jaw, and the happiest result may be expected in the next generation.

And this about exhausts the list of the more ordinary and preventable causes of decayed teeth.

There are others, attributable to *hereditary* and *transmissible* diseases, which are beyond control, as society now exists. This may appear a very delicate subject for me to touch on, but it is nevertheless a fact that till the *culture* of the human race is made a matter of as much consideration as the raising of fine poultry or live stock, men and women who have no *moral right* to bring into the world children to inherit and perpetuate disease and suffering, will

marry and transmit the curse of hereditary and incurable disease to unborn generations.

And teeth will continue to decay, from *this cause*, so long as these things are not understood and made a matter of serious consideration *before marriage*.

## LETTER XV.

### DISEASES OF THE SOFT TISSUES OF THE MOUTH.

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There are some diseases of the soft tissues of the mouth (or rather of the gums), which require brief mention, in connection with the care of the teeth. especially those which result from the lack of this proper care.

In their healthy condition the gums are firm and tough, forming regular *festoons* round and between the teeth ; their color is even and fine, and not too high ; their nerves are not sensitive, and their slightly *acid* secretions are neutralized by the *alkaline* saliva. When diseased, the tissue becomes soft and flabby ; the color denotes inflammation, and they bleed at the slightest touch, or pus is discharged from round the necks of the teeth ; their nerves become acutely sensitive ; the secretions abnormally acid, causing sensitive grooves round the necks of the teeth, which eventually decay. The breath is also rendered foul and offensive, sending poisonous effluvia to the lungs, and poisoning the blood.

The *causes* of this diseased condition of the gums, aside from general diseased condition of the whole system, are various, but all are traceable to the same

general source—neglect of the teeth, and *ignorance* of the consequences.

Particles of food, crowded down under the edges of the gum, generate acids and cause irritation and inflammation.

The saliva may deposit *tartar* on the teeth; soft and pasty, and small in quantity at first, and easily removed by the brush; but, if allowed to accumulate, increasing rapidly—like attracting like—and becoming hard and gritty; working its way under the gums down the roots of the teeth, it loosens them, so that sometimes they are detached entirely and fall, whole and undecayed, from their sockets.

The only remedy for this is to *prevent* this tartar in the first place, by cleanliness of the teeth; if you have allowed it to accumulate see that it is removed by the dentist, with proper instruments.

All *washes* or other preparations, advertised as being able to *dissolve* the tartar, will also dissolve the enamel of the tooth. The same may be said of the removal of the *green* or *brown* stains, seen round the necks of the teeth of children and adults.

After the tartar and stains have been removed, prevent its re-accumulation, by strict attention to the teeth after eating, and after sleep—in other words, keep them clean and keep the gums in good condition by the use of Listerine as a mouthwash.

*Gum-boils* are the result of disease and death of the pulp (or nerve) of the tooth, usually preceded by decay. They are prevented, by preventing decay,



which exposes the pulp, and cured by proper treatment of the tooth by the dentist.

*Swelled face* results from the same cause, and requires the same treatment.

*Never* poultice or make hot applications of any kind *on the outside* in these disorders ; for this course may cause a disfiguring *scar*. Reduce the inflammation by *cold applications* externally, and apply a hot-roasted raisin or fig, on the inside (the proper spot will indicate itself), and see your dentist.

In the care of the teeth, as well as of the general health, too much importance cannot be attached to *lime-water*.

A pitcher, appropriated solely to its preparation, should be found in every household, and a bottle of clear lime-water should have a place on the side-board, and on every wash-stand in the house. It is always ready, and requires no preparation as is the case with bi-carbonate of soda and other alkaline preparations. It is equally invaluable to both adult and infant.

If the mouth be well rinsed with lime-water after every meal, and especially after eating any acid fruit, or drinking lemonade, and just before retiring at night, a large proportion of the teeth that—without this simple precaution—would decay, may be kept sound, without any further care or expense than the use of the brush and tooth-pick.

The toothache of pregnancy may frequently be relieved by this simple remedy.

A spoonful in a little clear water swallowed on the first symptoms of indigestion (such as a feeling of fullness, and acid risings in the throat), will often act like a charm in preventing any farther indisposition.

Added to the milk fed to an infant, it prevents the formation of tough curds and renders the milk more easily digestible.

The vomiting and diarrhoea of an infant may frequently be checked by the repeated administration of a teaspoonful of lime-water in three or four teaspoonfuls of water or milk.

But especially in the care of the teeth, it is an invaluable prophylactic or preventive of decay. The two liquids, listerine and lime-water; and the two simple implements, the tooth-brush and the tooth-pick; carefully and regularly used, are the only essentials, if the diet and habits of life are what they should be.

And now my dear young friend, a brief enumeration in my next letter of a few of the diseases which may fairly be attributed to *decayed teeth* as their first cause, must bring to a close this already too lengthy correspondence.

Under the stimulus of your appreciative replies, and your repeated requests for still further information, it has grown into almost a *scientific dissertation*, far beyond its original design.

## LETTER XVI.

### DISEASES RESULTING FROM DECAYED TEETH.

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The tooth is an integral part of the human body—"nourished by the same aliments, vitalized by the same blood, pervaded by the same nerves"—as the heart, the lungs or the brain.

The stomach is the great laboratory of the human system. Dr. Edward Nelson, says: "For the proper performance of its functions, it should be in healthy condition; but this may be seriously deranged and the whole economy thrown into disorder, and even fatal consequences result from intense pain, shooting and vibrating along the nerves from the swollen and inflamed pulp of a single tooth."

The first and inevitable effect of decayed teeth on the general health is *indigestion* from insufficiently masticated food, and swallowing the vitiated fluids of the mouth.

The digestive organs ceasing to do their duty, "the blood becomes vitiated, and the whole organism becomes enfeebled, with its attendant gradual wasting, and loss of vital power."

Frequent indigestions result in chronic *dyspepsia*, *gastritis*, *enteritis* and DEATH.

*Neuralgia*, as caused by decayed teeth, is too com-

mon to need discussion. The very extraction of decayed teeth is sometimes a cause of neuralgia; thus we have a double reason against allowing the teeth to decay.

The effluvia from decayed teeth poisons the breath, and entering the lungs becomes a potent factor in the causes of *consumption*.

The discharging pus from diseased gums and decayed teeth, poisons the secretions and the blood, resulting in *septicæmia*, or blood poisoning.

The lamented Dr. J. Marion Sims, of New York, says: "Decayed teeth, with matter exuding from round the teeth, are the means of producing more *nervous disorders*, and more terrible consequences to the general health, than almost any other cause. \* \* It is a matter of regret that medical men generally have so little knowledge on this subject."

Dr. N. E. Hollace, of Boston, also says: "The bad effects of a diseased and unclean mouth on the general health are of a more serious consequence than most physicians are aware. In twenty-four hours we breathe twenty thousand times, and what must be the effect on the delicate structure of the lungs when, for days, months and years, the air we breathe is drawn through a depository of filth, and is poisoned by being mixed with effluvia rising from decayed and ulcerated teeth."

An English physician relates an instance of a gentleman, pronounced by one of the highest medical authorities of the day, to be afflicted with *cancer of*



*the stomach*, twenty years ago, and to whom it was proposed to have his decayed teeth removed, and an artificial set inserted. He says: "This proposal seemed almost a mockery to a man who had just been assured that he was gradually sinking, from an inevitably fatal malady; but it was acted on, with the result that the patient soon regained his digestive power, and is now alive, a fairly vigorous man of eighty years of age."

Dr. Winston, of Nashville, says: "I once saw a *cancer* which had resisted all treatment of physician and charlatan—a *dentist* cured it in five minutes. I saw a woman wasting under *consumption*, and regarded as doomed to die; her *teeth* were extracted and now she walks the streets of Nashville, with as blithe a step, and as agile, as any young lady in the city."

Dr. Peetz, of Merseberg, Germany, relates the incident of a working woman with *paralysis* of the left side. She having stated that the paralysis came on after an attack of acute pain in a certain tooth, the tooth was extracted; the paralysis was cured and never recurred.

Dr. Samuel Sexton, who has been engaged in an investigation of the teeth of school children, with special reference to the influence of decayed teeth on the *sight* and *hearing*, testifies he has found an almost constant association between near-sightedness, and impaired hearing, and decayed teeth. He has also found them responsible for deep-seated

cerebral trouble, *progressive dementia* (or insanity) having been arrested "by repairs on the teeth."

Dr. Barnett says: "It has long been known and recorded in medical literature that a peculiar sympathy exists between the ear and the teeth," while Dr. Edward Woakes, in his work on deafness, etc., traces this same connection through "the clear channel of nerve communication."

Dr. Koch, of Chicago, affirms: "*Insanity* has been cured by the extraction of carious teeth."

Dr. Savage relates the circumstance of a man who was more or less insane for six months, being sometimes quite dangerous. As he was also suffering from toothache, some decayed teeth were extracted and there was no return of the insanity.

An instance is cited by the celebrated French Professor Velpeau, of mental derangement in a lady, which was cured by the simple lancing of the gum, liberating a wisdom-tooth.

Dr. Nelson, of Frederick, Md., says: "Dyspepsia, phthisis pulmonalis, neuralgia, epilepsy, rheumatism, derangements of the ear and eye, and even insanity, have each had their origin in a carious tooth."

Pages could be filled with similar cases, but surely, enough has been said to show that the *toothache*, excruciating as are its agonies, forms but a minor part of the evils resulting from decayed teeth, though Dr. Hollace says "mere *pain* itself is fully capable of deranging the whole economy, and inducing serious and fatal disorder."

Another point: Though *health* is of the greatest importance, *beauty* is a matter of no small consideration.

A prime factor in beauty, and one of the most expressive features of the human countenance, is the *mouth*, and the expression of the mouth depends largely on the teeth. "In vain will the eyes sparkle with joy and delight, if the lips are compressed to hide a mouth full of defective teeth. The whole countenance, beaming with brightness, loses half its charm by the exhibition of a foul and unsightly denture. Half the charms of real culture are lost when expressed through unsightly teeth, and expressions of sorrow and grief are made hideous by the exhibition of a living tomb of decay."

## CONCLUSION.

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In conclusion, I will give you only one case\*, though numerous others might be cited, illustrating what can be accomplished by carefully and thoroughly following out such a system as that indicated in the preceding pages. It is the history of a family of five children, as narrated by their dentist (who was also their father).

There was every reason to anticipate *poor teeth* for them; for, on the *paternal* side, though the grandfather had fair teeth, he lost them before the age of fifty, while the grandmother lost all of hers before the age of thirty.

The father being a dentist, and appreciating the value of his teeth, kept them in good condition by the most watchful care, but has many large fillings. Of his two sisters (he had no brother), one wears an artificial denture; the other—much younger—has most of her own teeth, but they are very frail, and might almost be said to consist more of filling-material than tooth substance.

On the *maternal* side, the grandfather was toothless from the earliest recollection of his children, and

\*Extract from "OVERCOMING HEREDITY," by "Mrs. M. W. J." in *Southern Dental Journal*, November, 1883.



the grandmother lost all of her teeth before the birth of any of the grandchildren. The mother wore a full upper and lower set before the conception of her first child; her oldest sister wore six upper front teeth on pivots before the age of fourteen and a full set before she was twenty; the second sister has very frail teeth and only retains them by the greatest care, all of them having fillings; the third and youngest sister has also lost all of her teeth. She had no brother.

Knowing all this, and having given the subject much study, the father early endeavored to impress on his wife his views of her responsibility in the matter.

He laid before her a theory of tooth-culture by tooth-nutrition, and prescribed the diet and "drugs" by which he hoped to provide suitable nutritive elements, first to the embryo through the mother's nutrition; second, to the babe through her milk, and third to the babe itself in its diet, exercise, etc.

She, however, responded poorly to his efforts, in the case of the first child. The prescribed diet was distasteful, with its brown bread, oatmeal porridge, etc.; the lime-water and other prescriptions were unpalatable; in short, to use her own words, "other people's children had teeth and she supposed hers would, too, and she was not going to subject herself to any such vagaries in support of mere scientific theories."

Being young and self-willed, and not long married,

she had things pretty much her own way; but she had the mortification of finding that her baby had soft, chalky, defective teeth, which before its third birthday had received thirteen fillings, besides suffering the loss of a lower molar, thereby, to a critical eye, marring the perfect symmetry of the features.

Concluding it might perhaps be wiser to test the matter, radical changes were made in the diet and habits of the first child, and the mother adopted the *regime*, for herself, partially for the second child, and pretty fully for the three which followed. Bearing children rapidly, the first child being but little over four years old when the fourth was born, she was, however, unable to give that close personal attention to their teeth necessary to their absolute cleanliness and perfection.

Necessarily left much to the ministrations of ignorant and careless servants, their first permanent or sixth-year molars were neglected, while their diet dress and exercise were often the very contrary to what they should have been, though the father gave them all the attention possible, in the little time that could be spared from his professional duties and the care of an invalid wife.

But, with all these drawbacks, let us see the results of even the partial following out of the theory of *embryonic and infantile dental nutrition*:

The oldest child had the soft, chalky *baby-teeth* so hardened and reconstructed as to require no further fillings, after the thirteen put in before the third

birthday, as already stated, and now at the age of eighteen—with the exception of a slight irregularity resulting from the unfortunate early loss of the deciduous lower molar, as stated—she has a perfect set of teeth, of fine structure and quality, with only very small fissure-fillings in the sixth-year molars, which, in consequence of inherited defective fissures, received attention within a few months of their eruption; all of her teeth are otherwise intact.

The second child, a boy of seventeen, has as even and sound a set of teeth as can be found in a human mouth.

The third, now a girl of fifteen years, had, at the age of six years, a perfect set of temporary teeth, shedding them intact. Her permanent teeth, as far as erupted, are also of unusually fine texture; but she is very tardy in erupting the cuspids, bi-cuspids and second molars—perhaps owing to the fact of the superior quality and unusual persistence of the deciduous teeth.

The fourth child, with the exception of the same slight fissure-fillings, has all her permanent teeth, perfect in size, color, quality and position.

It is too early yet to pronounce judgment on the permanent teeth of the fifth child, as he is but eight years old; but as his deciduous teeth have remained intact with the exception of minute approximal fillings in the upper central incisors (due to the carelessness and neglect of nurses during the ill health of the mother), the eight incisors being all replaced by

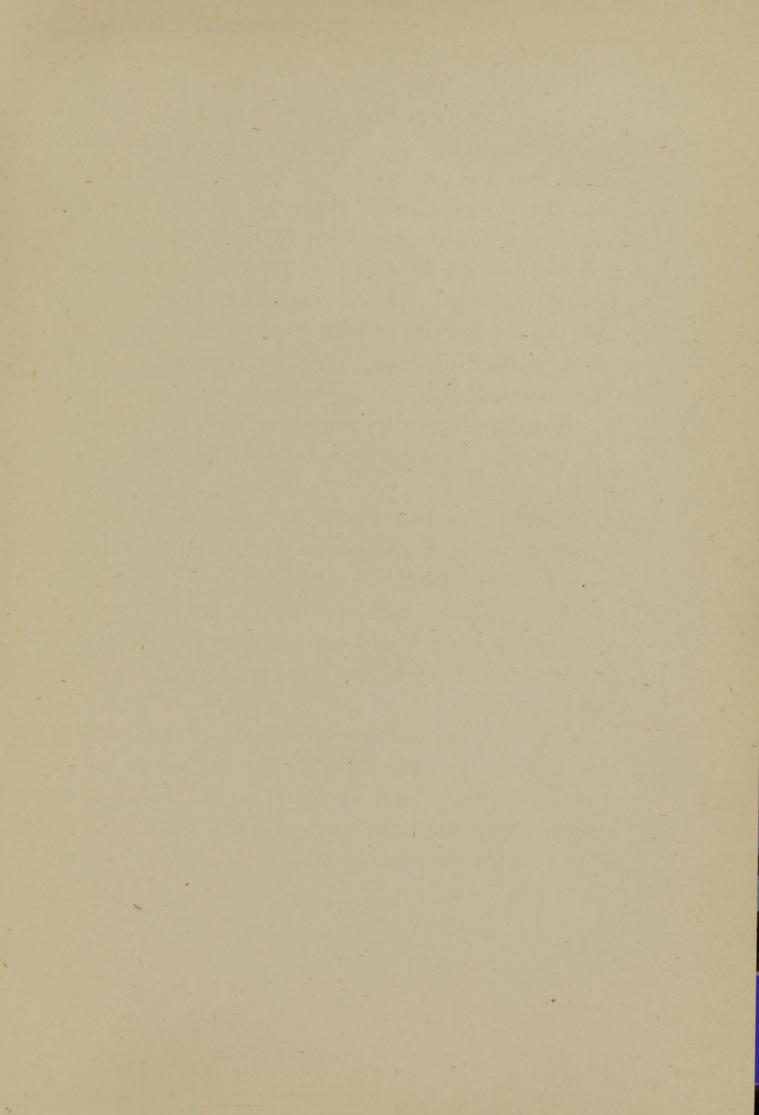
permanent teeth of fine quality; and as his sixth-year molars are of good texture, I think I may fairly claim that it is proved by this case of five children in one family, even were there no others on record, that, by a judicious system of diet, selecting such articles of food as offer the greatest abundance of mineral elements; by the free use of lime-water; by keeping the system in such a condition of general good health, by bathing, exercise, fresh air, etc., that these elements will be assimilated, and appropriated by the organs specially requiring them and that coming generations may thus be provided with *strong, sound teeth*.

If such a system could be universally adopted, diseased bodies and decayed teeth would be practically banished from the world.

Strong, hearty, well-nourished and well-developed men and women would replace the pale, puny, half-starved invalids now forming such a large portion of our population.

MOTHERS! to you is committed the responsibility of *beginning* this great work. In the words of another:—"Important as it is in reference to the present, its magnitude awes us when we consider it with relation to the millions yet to come."















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